SERVICE MANUAL

COLOR TELEVISION/VIDEO CASSETTE RECORDER

VT3110

MFR'S VERSION	CRT
A	A34JFQ90X06(W)
B	370KSB22-TC19-(SYB)
C	A34JXV70X06N45

ORION SALES, INC.
3471 N UNION DRIVE
OLNEY, ILLINOIS 62450
TEL. (618) 393-4322

Please file the revision with the original version.

VHS

Printed in Japan

REVISION
VERSION (B,C)

S/M CODE NO. M50513AASM
DATE OF ISSUE 9/1996

DIFFERENCES

Alteration of CRT

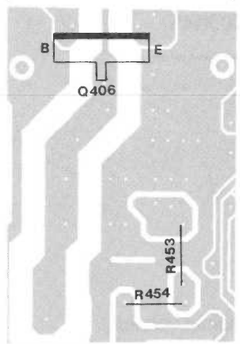
REF.NO.	MFR'S VERSION A		MFR'S VERSION B		MFR'S VERSION C	
	PART NO.	DESCRIPTION	PART NO.	DESCRITION	PART NO.	DESCRITION
⚠V801	098W140455	CRT A34JFQ90X06(W)	098Q140434	CRT 370KSB22-TC19-(SYB)	098Y140464	CRT A34JXV70X06N45
R108	R4X5T6123F	R, METAL 12K OHM 1/6W	R4X5T6223F	R, METAL 22K OHM 1/6W	R4X5T6563F	R, METAL 56K OHM 1/6W
R132	R903N8103J	RC 10K OHM 1/8W	R903N8103J	RC 10K OHM 1/8W	R903N8153J	RC 15K OHM 1/8W
R164	R903N8682J	RC 6.8K OHM 1/8W	R903N8682J	RC 6.8K OHM 1/8W	R903N8822J	RC 8.2K OHM 1/8W
R201	R801R7181J	RC 180 OHM 1/10W	R801R7181J	RC 180 OHM 1/10W	R801R7101J	RC 100 OHM 1/10W
R202	R801R7102J	RC 1K OHM 1/10W	R801R7102J	RC 1K OHM 1/10W	R801R7271J	RC 270 OHM 1/10W
⚠R440	R4X5T4153F	R, METAL 15K OHM 1/4W	R4X5T4153F	R, METAL 15K OHM 1/4W		Jumper
R448		Jumper		Jumper	R002T2102J	RC 1K OHM 1/2W
⚠R450	R635812R2J	R, FUSE 2.2 OHM 1W	R635812R2J	R, FUSE 2.2 OHM 1W	R635811R8J	R, FUSE 1.8 OHM 1W
⚠R451	R615812R2J	R, FUSE 2.2 OHM 1W	R615812R2J	R, FUSE 2.2 OHM 1W	R63581R56J	R, FUSE 0.56 OHM 1W
R454		Jumper	R001T4153J	RC 15K OHM 1/4W		Jumper
R455	R002T2150J	RC 15 OHM 1/2W	R002T2150J	RC 15 OHM 1/2W	R002T2120J	RC 12 OHM 1/2W
R509	R001T4273J	RC 27K OHM 1/4W	R001T4273J	RC 27K OHM 1/4W	R001T4563J	RC 56K OHM 1/4W
R510	R001T6224J	RC 220K OHM 1/6W	R001T6224J	RC 220K OHM 1/6W	R001T6823J	RC 82K OHM 1/6W
R648	R903N8224J	RC 220K OHM 1/8W	R903N8224J	RC 220K OHM 1/8W	R903N8104J	RC 100K OHM 1/8W
R653	R902N8183J	RC 18K OHM 1/8W	R902N8183J	RC 18K OHM 1/8W	R902N8203J	RC 20K OHM 1/8W
R804	R001T6133G	RC 13K OHM 1/6W	R001T6133G	RC 13K OHM 1/6W	R001T6103G	RC 10K OHM 1/6W
R807	R001T6133G	RC 13K OHM 1/6W	R001T6103G	RC 10K OHM 1/6W	R001T6103G	RC 10K OHM 1/6W
R817	R001T6472G	RC 4.7K OHM 1/6W	R001T6182J	RC 1.8K OHM 1/6W	R001T6152J	RC 1.5K OHM 1/6W
R818	R001T6242G	RC 2.4K OHM 1/6W	R001T6332J	RC 3.3K OHM 1/6W	R001T6272J	RC 2.7K OHM 1/6W
R819	R001T6432G	RC 4.3K OHM 1/6W	R001T6332J	RC 3.3K OHM 1/6W	R001T6332J	RC 3.3K OHM 1/6W
⚠C425	C034BN7E2K	CC 150 PF 2KV	C034BN7E2K	CC 150 PF 2KV		DEL
C434	P3N1F2153J	CPP 0.015 UF 200V	P3N1F2153J	CPP 0.015 UF 200V	P3N1F2123J	CPP 0.012 UF 200V
C450		———		———	C034BN7B2K	CC 120 PF 2KV
L402		———		———	022G000008	COIL LINEARITY 1429MS
PCB010	A50513B01A	VCR MAIN PCB ASS'Y VM4072D	A50513A01A	VCR MAIN PCB ASS'Y VM4072D	A50513C01A	VCR MAIN PCB ASS'Y VM4072D
PCB070	A50513B07AT	TV MAIN PCB ASS'Y TM0313D-T	A50513A07A	TV MAIN PCB ASS'Y TM0313D	A50513C07A	TV MAIN PCB ASS'Y TM0313D
PCB110	A50513B11A	CRT PCB ASS'Y TC0202D	A50513A11A	CRT PCB ASS'Y TC0202D	A50513C11A	CRT PCB ASS'Y TC0202D

VCR MAIN PCB's, TV MAIN PCB's and CRT PCB's are not interchangeable.

TV PRINTED CIRCUIT BOARD

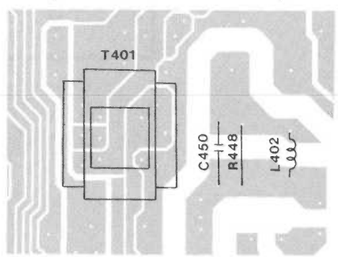
MAIN

(MFR'S VERSION B)



ADD R454

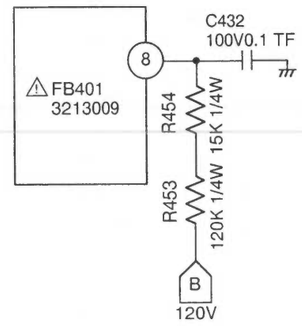
(MFR'S VERSION C)



ADD R448
C450
L402

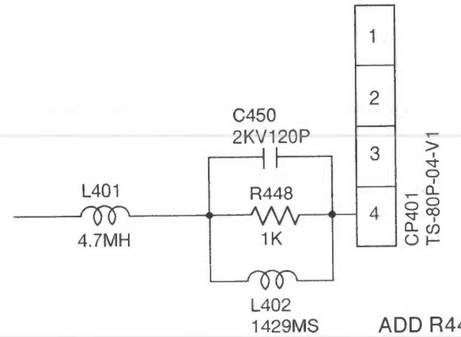
TV DEFLECTION SCHEMATIC DIAGRAM

(MFR'S VERSION B)



ADD R454

(MFR'S VERSION C)



ADD R448
C450
L402

SERVICE MANUAL

COLOR TELEVISION/VIDEO CASSETTE RECORDER

VT3110

SPECIFICATIONS

GENERAL

Power Source		: AC 120V, 60 Hz
Power Consumption		: 88 watts
Temperature		
	Operating	: 41°F to 104°F (5°C to 40°C)
	Storage	: -4°F to 140°F (-20°C to 60°C)
Video	Input	: 1.0 Vp-p/75 ohm
	Output	: 1.0 Vp-p/75 ohm
Audio	Input	: 300 mV/50K ohm
	Output	: 390 mV/1K ohm
Intermediate Frequency		
Picture IF Carrier Frequency		: 45.75 MHz
Color Sub Carrier Frequency		: 42.17 MHz
Sound IF Carrier Frequency		: 41.25 MHz
Dimensions (WxHxD)		: 14-3/8" x15-1/16" x14-9/16" (365x382x370mm)
Weight		: 27.6 lbs (12.5Kg)

TELEVISION

Picture Size		: 13 inch
Tuning System		: 181 Channel Quartz PLL frequency synthesized
Channel Coverage		
	(VHF)	: Channels 2-13
	(UHF)	: Channels 14-69
	(CATV)	: 14-36 (A)-(W)
		: 37-59 (AA)-(WW)
		: 60-85 (AAA)-(ZZZ)
		: 86-94 (86)-(94)
		: 95-99 (A-5)-(A-1)
		: 100-125 (100)-(125)
		: 01 (5A)
Antenna Input Impedance		: VHF/UHF In 75 ohms coaxial
Audio Output Power		: 1 watt
Speaker		: 3", 8 ohm

VCR

Video System		: VHS, 2 Rotary Heads Helical Scanning System
Video Signal		: NTSC Color
Cassette Tape		: VHS
Audio Track		: 1 Track
Tape Speed	(SP)	: 1-5/16" ips (33.35 mm/sec)
	(LP)	: 21/32" ips (16.67 mm/sec)
	(EP)	: 7/16" ips (11.12 mm/sec)
Playback Time	(SP)	: 160 min. with T-160 video cassette
	(LP)	: 320 min. with T-160 video cassette
	(EP)	: 480 min. with T-160 video cassette
Tape Width		: 1/2" (12.65mm)
Frequency Response	(SP)	: 120 Hz to 10 KHz
	(LP)	: 120 Hz to 6 KHz
	(EP)	: 120 Hz to 4 KHz

All the specifications and features are subject to change without notice.

VHS

ORIGINAL VERSION (A)

S/M CODE NO. M50513BASM
DATE OF ISSUE 6/1995

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IMPORTANT SERVICE SAFETY INFORMATION

Operating the receiver outside of its cabinet or with its back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon, picture tube dag and tuner cluster when operating the chassis.

These receivers have a "polarized" AC line cord. The AC plug is designed to fit into standard AC outlets in one direction only. The wide blade connects to the "ground side" and the narrow blade connects to the "hot side" of the AC line. This assures that the TV receiver is properly grounded to the house wiring. If an extension cord must be used, make sure it is of the "polarized" type.

Since the chassis of this receiver is connected to one side of the AC supply during operation, service should not be attempted by anyone not familiar with the precautions necessary when working on these types of equipment.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

Certain HV failures can increase X-ray radiation. Receivers should not be operated with HV levels exceeding the specified rating for their chassis type. The maximum operating HV specified for the chassis used in these receivers is 29kV ±1.0kV at zero beam current with a line voltage of 120V AC. Higher voltage may also increase the possibility of failure in the HV supply.

It is important to maintain specified values of all components in the horizontal and high voltage circuits and anywhere else in the receiver that could cause a rise in high voltage, or operating supply voltages. No changes should be made to the original design of the receiver.

Components shown in the shaded areas on the schematic diagram and/or identified by ⚠ in the replacement parts list should be replaced only with exact factory recommended replacement parts. The use of unauthorized substitute parts may create shock, fire, X-ray radiation, or other hazards.

To determine the presence of high voltage, use an accurate high impedance HV meter connected between the second anode lead and the CRT dag grounding device. When servicing the High Voltage System, remove static charges from it by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube dag and 2nd anode lead (have AC line cord disconnected from AC supply).

The picture tube used in this receiver employs integral implosion protection. Replace with a tube of the same type number for continued safety. Do not lift picture tube by the neck. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely. Keep others without shatterproof goggles away.

When removing springs or spring mounted parts from the tuner, tuner cluster or chassis, shatterproof goggles must be worn. Keep others without shatterproof goggles away.

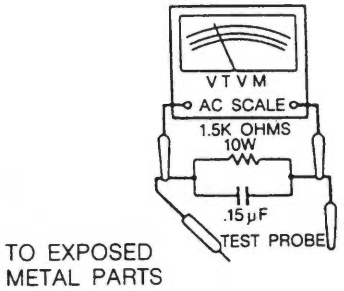
Before returning the receiver to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads, knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 120V AC receptacle. (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a nonpolarized adapter plug must be used only for the purpose of completing these checks.)

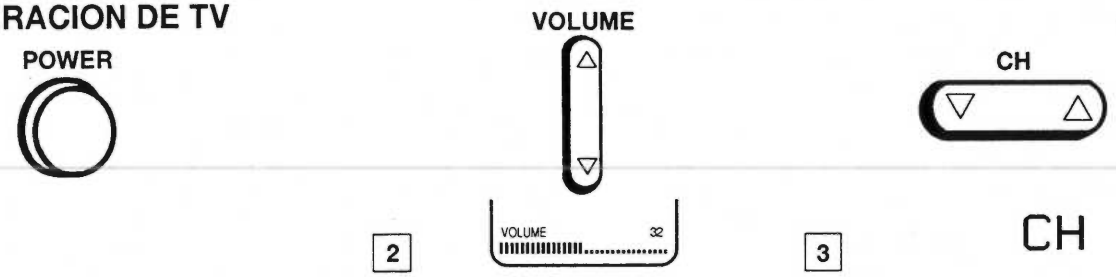
If available, measure current using an accurate leakage current tester. Any reading of 0.35 mA or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.

If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohm, 10 watt resistor paralleled by a 0.15 µF capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure this AC voltage drop across the resistor. Any reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.



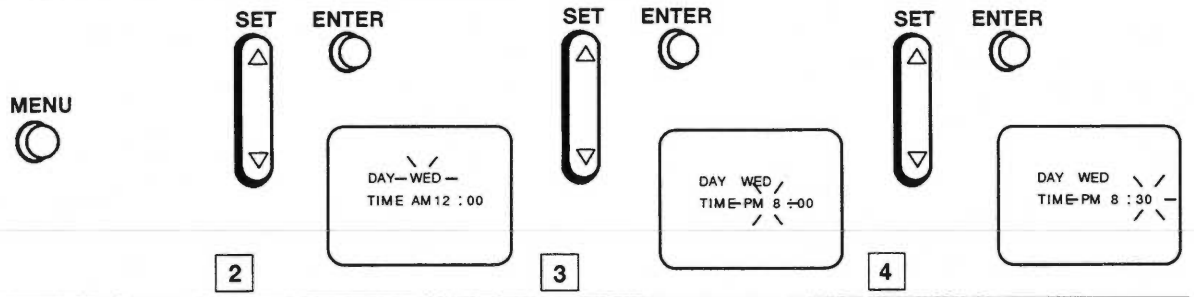
QUICK SET-UP SHEETS

TV OPERATION
OPERACION DE TV



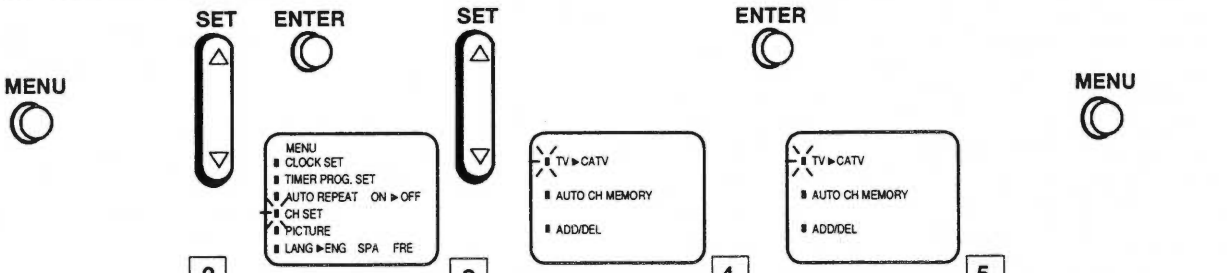
1	2	3
Turn on the TV/VCR. Encienda el TV/VCR.	Adjust the volume. Ajuste el volumen.	Select the channel. Seleccione el canal.

TO SET THE ON-SCREEN CLOCK DISPLAY
PARA AJUSTAR EL VISUALIZADOR DEL RELOJ EN PANTALLA



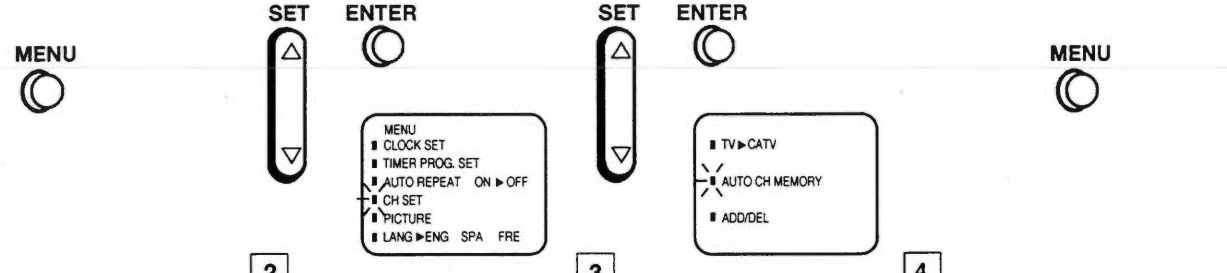
1	2	3	4
Press the MENU button. Presione el botón MENU.	Set the day of the week. Ajuste el día de la semana.	Set the present hour. Ajuste la hora actual.	Set the present minute. Ajuste el minuto actual.

TV/CATV SELECTION
SELECCION DE TV/CATV



1	2	3	4	5
Press the MENU button. Presione el botón MENU.	Select the CH SET mode. Seleccione el modo CH SET.	Select the TV/CATV mode. Seleccione el modo TV/CATV.	Select the TV or CATV mode. Seleccione el modo TV o CATV.	Press the MENU button twice. Presione el botón MENU dos veces.

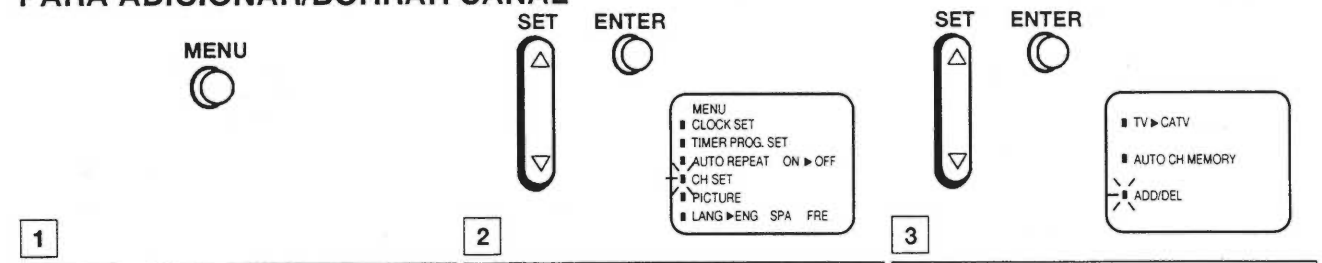
AUTO MEMORY TUNING
SINTONIZACION DE MEMORIA AUTOMATICA



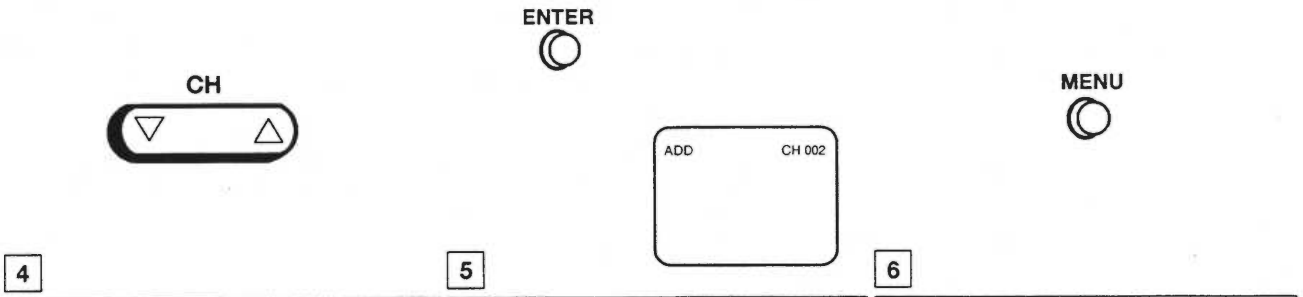
1	2	3	4
Press the MENU button. Presione el botón MENU.	Select the CH SET mode. Seleccione el modo CH SET.	Select the AUTO CH MEMORY mode. Seleccione el modo AUTO CH MEMORY.	Press the MENU button twice when TV stops searching for channels. Cuando TV detenga búsqueda de los canales presione el botón MENU dos veces.

QUICK SET-UP SHEETS

TO ADD/DELETE CHANNELS
PARA ADICIONAR/BORRAR CANAL

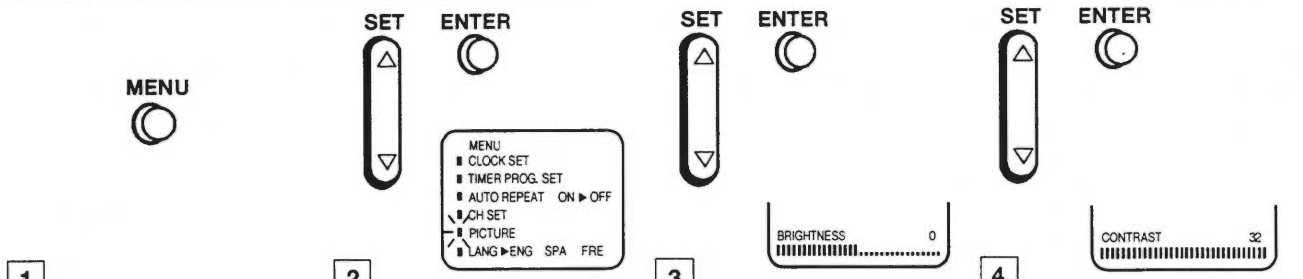


1	2	3
Press the MENU button. Presione el botón MENU.	Select the CH SET mode. Seleccione el modo CH SET.	Select the ADD/DELETE mode. Seleccione el modo ADD/DELETE.

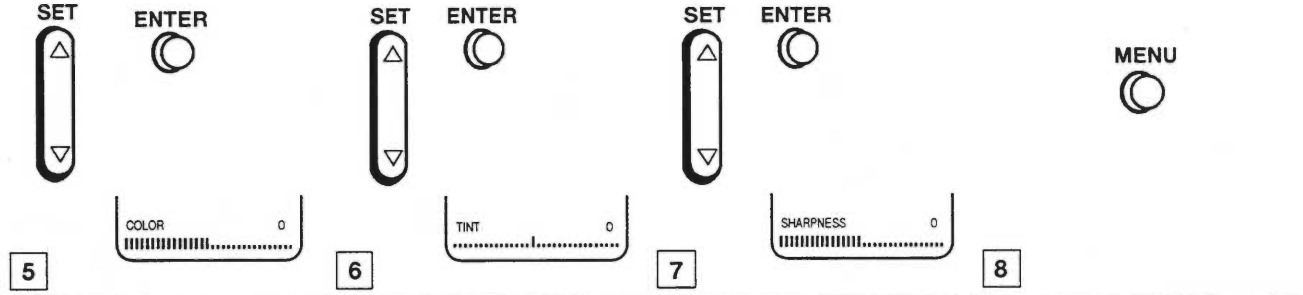


4	5	6
Select the channel. Seleccione el canal.	Press ENTER to add or delete a channel. Presione ENTER para adicionar o borrar un canal.	Press the MENU button three times. Presione el botón MENU tres veces.

ON-SCREEN PICTURE ADJUSTMENTS
AJUSTES DE IMAGEN EN PANTALLA



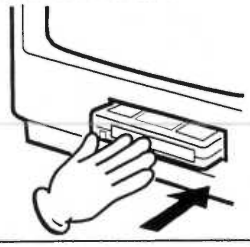
1	2	3	4
Press the MENU button. Presione el botón MENU.	Select the PICTURE option. Seleccione la opción de PICTURE.	Adjust the brightness. Ajuste el brillo.	Adjust the contrast. Ajuste el contraste.



5	6	7	8
Adjust the color. Ajuste el color.	Adjust the tint. Ajuste el tinte.	Adjust the sharpness. Ajuste el nitidez.	Press the MENU button twice. Presione el botón MENU dos veces.

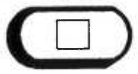
QUICK SET-UP SHEETS

PLAYBACK
REPRODUCCION



PLAY

STOP



PLAY

STOP

1	2	3
Load a cassette tape. Coloque un videocassette.	Start the playback. If Erase Tab is removed, playback starts automatically. Empiece la reproducción.Si la lengüeta de borrados se ha desprendado, reproducción empieza automáticamente.	Stop the playback. Detenga la reproducción.

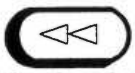
SPECIAL EFFECTS
EFECTOS ESPECIALES

To visually search backward, press the REW button once or twice in the PLAYBACK mode. Press the PLAY button to resume normal viewing speed.
Para buscar visualmente hacia atrás, presione el botón REW una o dos veces en el modo de REPRODUCCION. Presione el botón PLAY para volver a velocidad normal.

To visually search forward, press the F.FWD button once or twice in the PLAYBACK mode. Press the PLAY button to resume normal viewing speed.
Para buscar visualmente hacia delante, presione el botón F.FWD una o dos veces en el modo de REPRODUCCION. Presione el botón PLAY para volver a velocidad normal.

Press the PAUSE/STILL button in the PLAYBACK mode. Press again to resume normal playback.
Presione el botón PAUSE/STILL en el modo de REPRODUCCION. Presione otra vez para volver reproducción normal.

REW

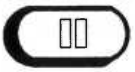


REV

F.FWD

CUE

PAUSE/STILL

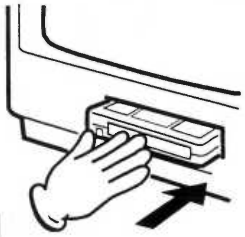


STILL

Speed search time depends upon the speed used (SP, LP or EP) during recording. To rewind or fast forward a tape, press the STOP button, and then press the REW or F.FWD button.
El tiempo de búsqueda rápida depende de la velocidad usada (SP, LP o EP) durante la grabación.
Para rebobinar o avanzar una cinta, presione el botón STOP y luego presione el botón REW o F.FWD.

REWIND/REV SEARCH REBOBINAR/BUSQUEDA HACIA ATRAS	F.FWD/FWD SEARCH AVANZAR/BUSQUEDA HACIA DELANTE	STILL PICTURE IMAGEN FIJA

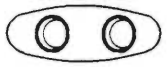
RECORDING
GRABACION



SPEED

CH

REC/OTR

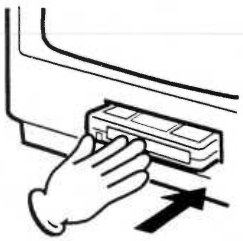


CH012

REC CH012

1	2	3	4
Load a cassette tape. Coloque un videocassette.	Select the tape speed. Seleccione la velocidad de cinta.	Select the channel. Seleccione el canal.	Start the recording. Empiece la grabación.

ONE-TOUCH TIMER RECORDING (OTR)
GRABACION POR TEMPORIZADOR DE UN SOLO TOQUE(OTR)



SPEED

CH

REC/OTR

CH012

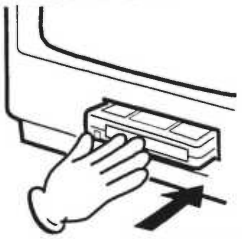
OTR CH012

0:30

1	2	3	4
Load a cassette tape. Coloque un videocassette.	Select the tape speed. Seleccione la velocidad de cinta.	Select the channel. Seleccione el canal.	Set the recording time. Ajuste el tiempo de grabación.

QUICK SET-UP SHEETS

ON-SCREEN TIMER RECORDING
GRABACION POR TEMPORIZADOR EN PANTALLA



1

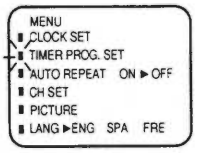
Load a cassette tape.
Coloque un videocassette.

MENU

2

Press the MENU button.
Presione el botón MENU.

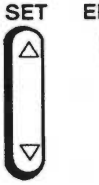
SET ENTER

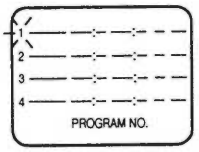


3

Select the TIMER PROG. SET option.
Seleccione la opción de TIMER PROG.SET.

SET ENTER

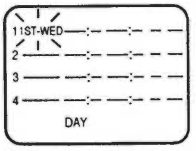




4

Select the program number.
Seleccione el número de programa.

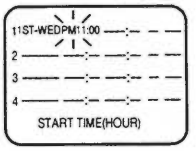
SET ENTER



5

Select the day of the week.
Seleccione el día de la semana.

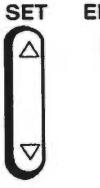
SET ENTER

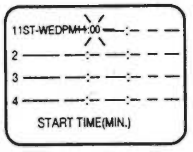


6

Set the starting hour.
Ajuste la hora de comienzo.

SET ENTER

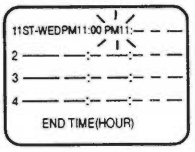




7

Set the starting minute.
Ajuste el minuto de comienzo.

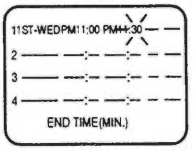
SET ENTER



8

Set the ending hour.
Ajuste la hora de término.

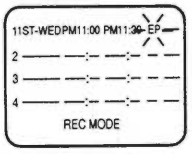
SET ENTER



9

Set the ending minute.
Ajuste el minuto de término.

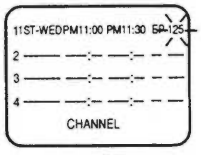
SET ENTER



10

Select the tape speed.
Seleccione la velocidad de cinta.

SET ENTER



11

Select the channel.
Seleccione el canal.

TIMER REC

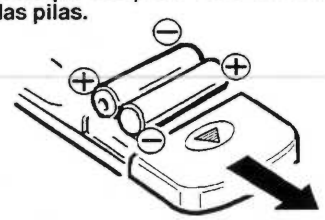
TIMER REC

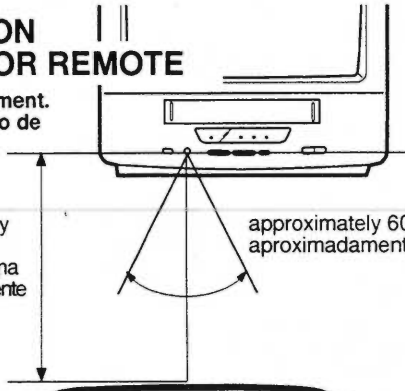
12

Press the TIMER REC button.
Presione el botón TIMER REC.

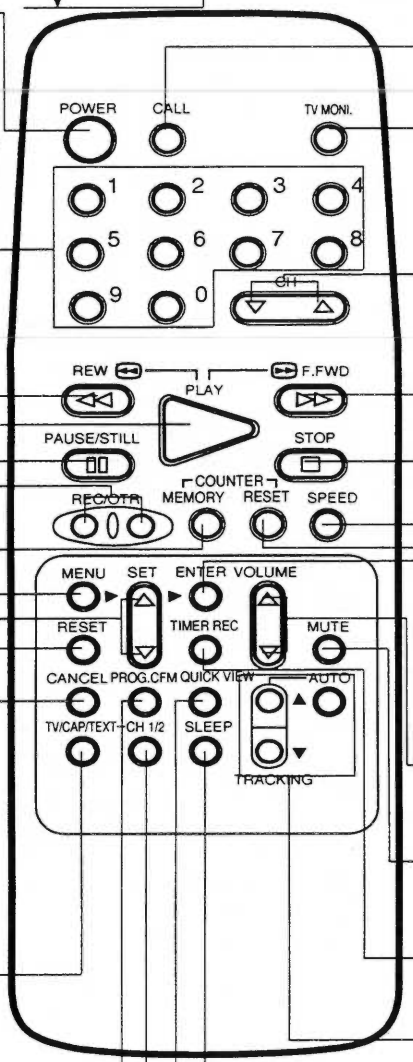
REMOTE CONTROL OPERATION
OPERATION DE CONTROLADOR REMOTE

Insert two "AAA" batteries in battery compartment.
Coloque dos pilas "AAA" en el compartimiento de las pilas.





REMOTE SENSOR
Aim the remote control directly at the remote sensor.
SENSOR DE REMOTO
Apunte la unidad de controlador remoto directamente hacia el sensor de remoto.



POWER Button
Botón POWER

Direct Channel Selection Buttons (0-9)
Allows direct access to any channel.
Botones (0-9) para selección directa de canal
Permiten el acceso directo a cualquier canal.

REW (Rewind) Button
In the Stop mode, this button rapidly winds the tape backwards. In the Play mode, this button activates reverse search.
Botón REW (rebobinado)
En el modo de parada, este botón hace rebobinar la cinta rápidamente hacia atrás. En el modo de reproducción, este botón activa la búsqueda hacia atrás.

PLAY Button
Press to play a prerecorded tape.
Botón PLAY
Presiónelo para reproducir una cinta grabada.

PAUSE/STILL Button
During recording, this button temporarily stops the tape. During playback, it stops the tape and displays a still image on the TV screen.
Botón PAUSE/STILL
Durante la grabación este botón detiene temporariamente la cinta. Durante la reproducción detiene la cinta y muestra una imagen fija en la pantalla de TV.

REC/OTR Buttons
Press once to start normal recording. Additional presses activate One-Touch Timer Recording.
Botones REC/OTR
Presiónelo una vez para activar la grabación normal. Presionándolo otra vez se activa la grabación por temporizador de un solo toque.

COUNTER MEMORY Button
Used to stop the tape when the counter reaches 0H00M00S (0 Hours, 00 Minutes, 00 Seconds).
Botón COUNTER MEMORY
Utilícelo para detener la cinta cuando el contador llegue a 0H00M00S (0 hora, 00 minuto, 00 segundo).

MENU Button
Press to display the On-Screen menu function.
Botón MENU
Presiónelo para indicar el menú de función en pantalla.

SET UP/DOWN Button
Used to set the clock, timer recording, auto repeat, channel set, picture adjustment and language.
Botón arriba/abajo de SET
Utilícelo para ajustar el reloj, grabación con temporizador, repetición automática, selección de canal, ajuste de imagen y lengua.

RESET Button
Press to reset the On-Screen picture adjustments to their factory preset positions.
Botón RESET
Presiónelo para reposicionar los ajustes de imagen en pantalla a la programación de fábrica.

CANCEL button
Used to clear the selected timer recording program.
Botón CANCEL
Utilícelo para cancelar el programa seleccionado para grabación por temporizador.

TV/CAPTION/TEXT Button
Switches between Caption, Text and TV modes for Closed-Captioned programs.
Botón TV/CAPTION/TEXT
Conmuta entre los modos de leyenda, texto y TV para programas con leyendas codificadas.

PROGRAM CONFIRM Button
Press to confirm the programmed timer recording.
Botón PROGRAM CONFIRM
Presiónelo para confirmar la grabación por temporizador programada.

CH. 1/2 Button
Switches between Channel 1 and Channel 2 in the closed caption mode.
Botón CH. 1/2
Conmuta entre el canal 1 y el canal 2 en el modo de leyendas codificadas.

QUICK VIEW Button
Switches between the present channel and the last channel selected.
Botón QUICK REVIEW
Conmuta entre el canal que está sintonizado y el último canal seleccionado.

CALL Button
Displays the present time/day of the week, channel and counter on the TV screen.
Botón CALL
Muestra la hora actual/el día de la semana, el canal, el contador, la selección de velocidad (y el modo de VCR si el VCR está funcionando) en la pantalla de TV.

TV MONI. (Monitor) Button
Used to temporarily view a TV channel while in the playback mode.
Botón TV MONI. (Monitor)
Utilícelo visualizar temporalmente un canal seleccionado de TV durante el modo de reproducción.

CHANNEL Up/Down Buttons
Press the Up button to change to a higher numbered channel set into memory. Press the Down button to change to a lower numbered channel set into memory.
Botones arriba/abajo de CHANNEL
Presione el botón "arriba" para cambiar a un canal con un número mayor que esté almacenado en la memoria. Presione el botón "abajo" para cambiar a un canal con número más bajo que esté almacenado en la memoria.

F.FWD (Fast Forward) Button
In the Stop mode, this button rapidly winds the tape forward. In the Play mode, this button activates forward search.
Botón F.FWD (avance rápido)
En el modo de parada, este botón avanza rápidamente la cinta. En el modo de reproducción este botón activa la búsqueda hacia adelante.

STOP Button
Press once to stop the tape.
Botón STOP
Presiónelo una vez para detener la cinta.

Tape SPEED SP/LP/EP Selector Button
Sets the tape speed for recording.
Botón selector de la velocidad de la cinta SPEED SP/LP/EP
Establece la velocidad de la cinta para la grabación.

COUNTER RESET Button
Used to reset the counter to 0H00M00S.
Botón COUNTER RESET
Utilícelo para reposicionar el contador a 0H00M00S.

ENTER Button
Used to enter information for timer recording and clock setting.
Botón ENTER - Utilícelo para ingresar información para la grabación por temporizador y ajuste del reloj.

VOLUME Up/Down Buttons
Press the Up button to increase, or the Down button to decrease the volume level.
Botones arriba/abajo de VOLUME
Presione el botón "arriba" para aumentar el volumen; presione el botón "abajo" para reducir el nivel de volumen.

MUTE Button
Press to turn off the sound. Press again to turn the sound back on.
Botón MUTE
Presiónelo para silenciar el sonido. Presiónelo otra vez para escuchar el sonido.

TIMER REC Button
Used to set the TV/VCR to start recording at a preset time.
Botón TIMER REC
Utilícelo para programar su TV/VCR para que inicie la grabación a una hora determinada.

DIGITAL AUTO TRACKING Buttons Allows automatic or manual adjustment of tracking to minimize picture noise during playback.
Botones DIGITAL AUTO TRACKING - Permite el ajuste automático o manual del seguimiento para minimizar el ruido de la imagen durante la reproducción.

SLEEP Button
Sets the TV to turn off automatically after up to 120 minutes.
Botón SLEEP
Hace que el TV se apague automáticamente; programable hasta un máximo de 120 minutos.

NOTE:
- Do not allow bright light to shine on the remote sensor.
- Operate the remote control from a position where there are no obstructions between it and the TV/VCR.
- Best results during speed search playback can be obtained with cassette tapes recorded in the "EP" speed.

NOTA:
- No permite que el sensor de controlador remoto quede expuesto a luz fuerte.
- Opere la unidad de controlador remoto desde una posición en que no haya obstáculos entre ella y el TV/VCR.
- Para mejores resultados durante la operación de reproducción con búsqueda rápida. utilice cassettes grabados a velocidad "EP".

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 4 screws ①.
2. Remove the 2 screws ② which are used for holding the Back Cabinet.
3. Disconnect the following connector. (CP301 2 pins)
4. Remove the Back Cabinet in the direction of arrow.

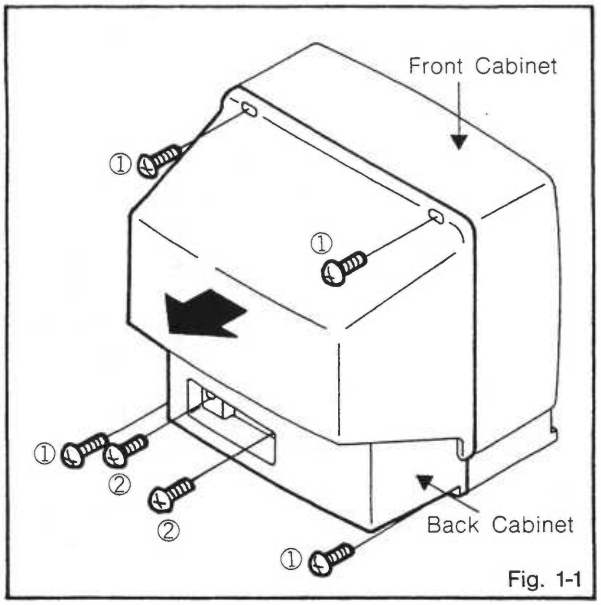


Fig. 1-1

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1-2: TV BLOCK (Refer to Fig. 1-2)

1. Remove the CRT PCB in the direction of arrow Ⓐ, then unplug the following connector. (CP801 2 pins)
2. Remove the Anode Cap.
   (Refer to REMOVAL OF ANODE CAP)
3. Disconnect the following connectors.
   (CP401 4 pins, CP860 2 pins, CP810 8 pins, CP820 11 pins, CP850 8 pins)
4. Slide out the TV Block in the direction of arrow Ⓑ.

   The speaker cannot be removed before removing the Earphone PCB.

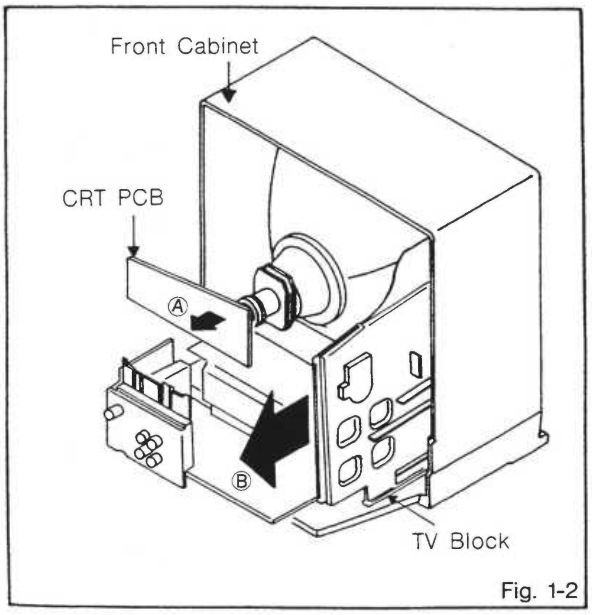


Fig. 1-2

1-3: VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Unlock the 2 supports ②.
3. Remove the VCR Block in the direction of arrow.

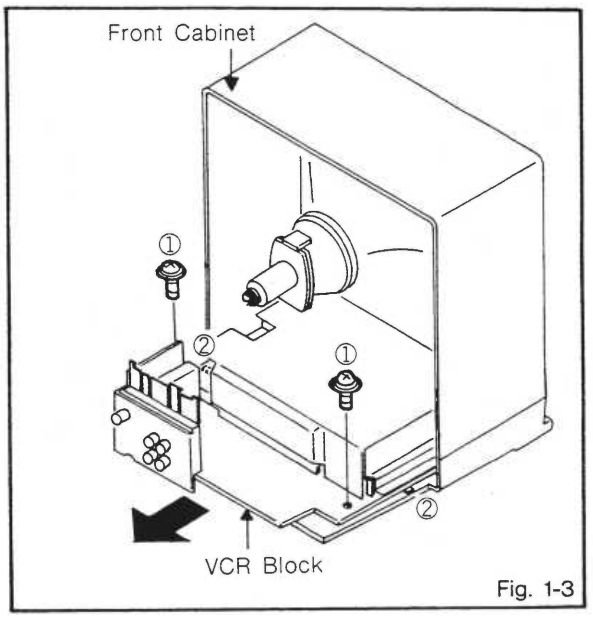


Fig. 1-3

DISASSEMBLY INSTRUCTIONS

1-4: LOCATION OF PRINTED CIRCUIT BOARDS. (Refer to Fig. 1-4)

CAUTION: BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

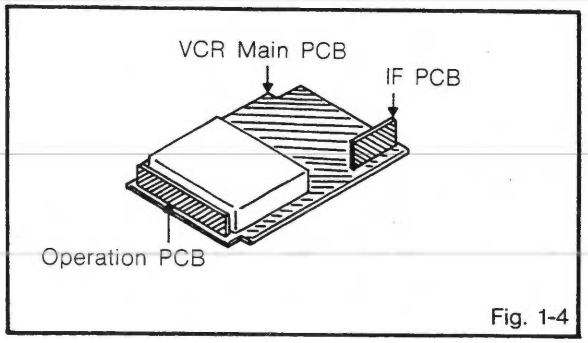


Fig. 1-4

1-5: TV MAIN PCB (Refer to Fig. 1-5)

1. Remove the 5 screws ①.
2. Unlock the 2 supports ② and remove the TV Main PCB in the direction of arrow.

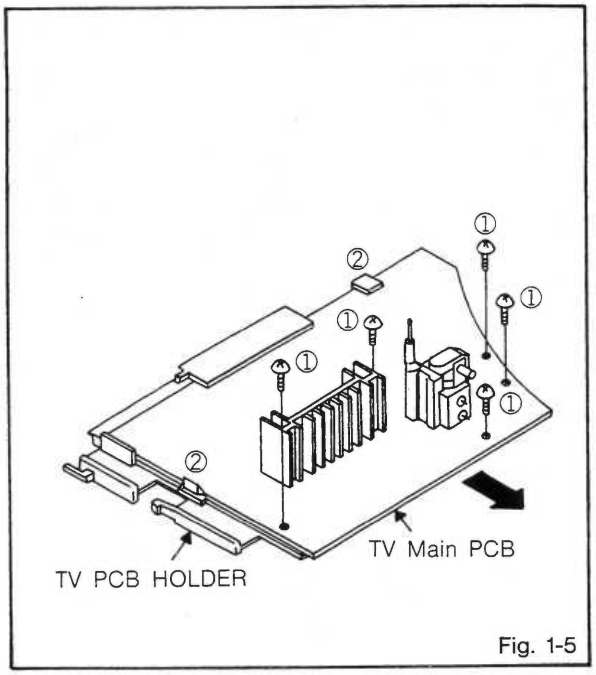


Fig. 1-5

1-6: DECK SHIELD PLATE ASS'Y (Refer to Fig. 1-6)

1. Remove the 4 screws ①.
2. Remove the Deck Shield Plate ASS'Y in the direction of arrow.

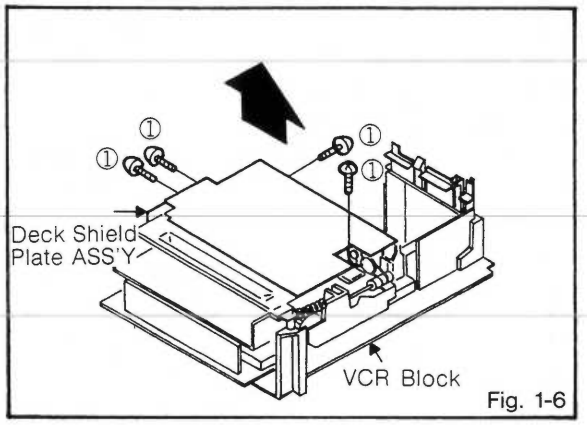


Fig. 1-6

1-7: FRONT LOADING UNIT, CHASSIS SECTION, JACK PLATE AND VCR MAIN PCB (Refer to Fig. 1-7)

1. Remove the 2 screws ①.
2. Remove the screw ②.
3. Remove the Front Loading Belt 2.
4. Remove the Front Loading Unit in the direction of arrow Ⓐ.
5. Remove the screw ③.
6. Remove the 2 screws ④.
7. Remove the 2 Pulley Shafts.
8. Unlock the Head Amp PCB.
9. Unlock the 2 supports ⑤ and unlock the Chassis Section in the direction of arrow Ⓑ.
10. Remove the screw ⑥.
11. Unlock the 2 supports ⑦ and remove the Jack Plate in the direction of arrow Ⓒ.
12. Unlock the 3 supports ⑧ and remove the VCR Main PCB in the direction of arrow Ⓑ.
13. If IF PCB or Operation PCB needs to be removed from VCR Main PCB, desoldering is necessary.

DISASSEMBLY INSTRUCTIONS

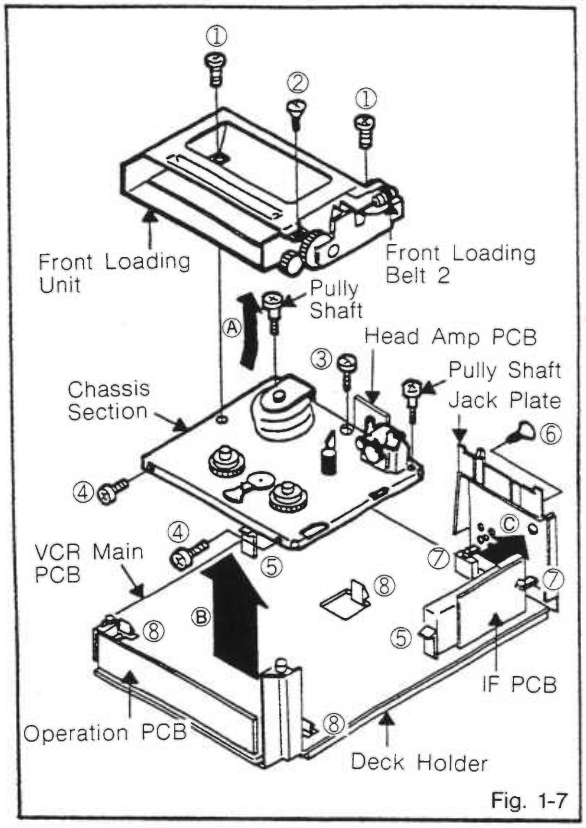


Fig. 1-7

2. REMOVAL OF DECK PARTS

2-1: ACTUATOR SUB BRAKE / IDLER ASS'Y (Refer to Fig. 2-1)

1. Remove the polyslider washer ①.
2. Remove the Idler Ass'y.
3. Remove the TS Brake Spring.
4. Remove the Actuator Sub Brake.

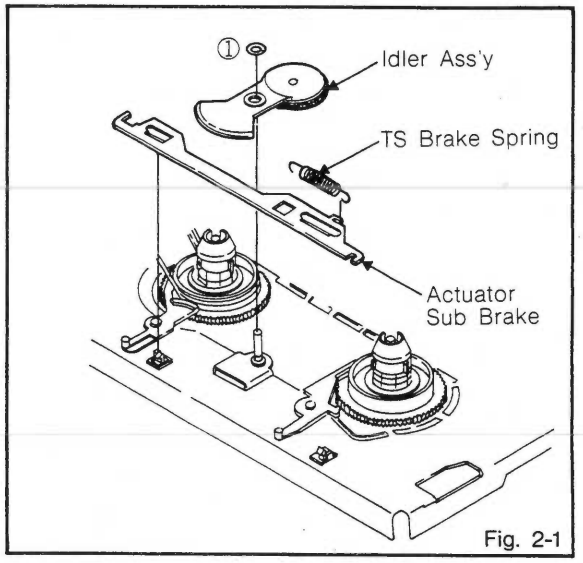


Fig. 2-1

2-2: TENSION BAND (Refer to Fig. 2-2)

1. Remove the Actuator Sub Brake.
2. Remove the SS Brake Spring, then remove the SS Brake Arm.
3. Remove the screw ①.
4. Remove the Tension Band Ass'y from the Tension Arm Ass'y.

NOTES
1. Install the Tension Band Ass'y without twisting it.
2. Adjust the placement of the Tension Post. **(Refer to item 1-2 of MECHANICAL ADJUSTMENTS)**
3. Adjust and confirm the back tension during playback. **(Refer to item 1-3 of MECHANICAL ADJUSTMENTS)**

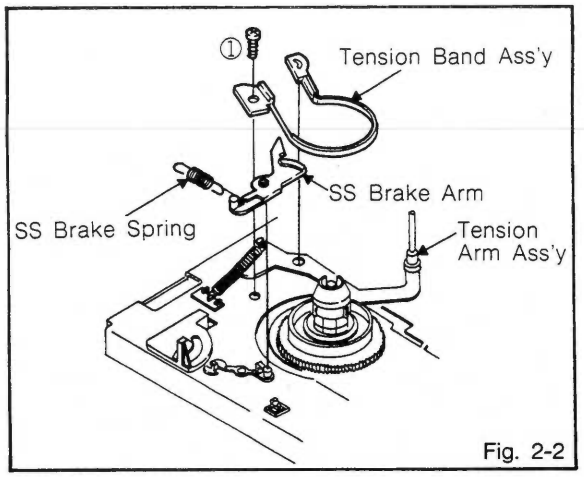


Fig. 2-2

2-3: REEL DISK (Refer to Fig. 2-3)

(Reel Disk S Ass'y)
1. Remove the Actuator Sub Brake.
2. Remove the SS Brake Spring, then remove the SS Brake Arm.
3. Remove the Tension Band ass'y from the Tension Arm Ass'y.
4. Remove the polyslider washer ①.
5. Pull the Reel Disk S Ass'y upward and replace it.

(Reel Disk T Ass'y)
1. Remove the TS Brake Spring.
2. Remove the Actuator Sub Brake.
3. Move the TS Brake Ass'y in the direction of arrow.
4. Remove the polyslider washer ②.
5. Pull the Reel Disk T Ass'y upward and replace it.

NOTES
1. The height adjustment washers ③ are sometimes attached to the back of the Reel Disk.
2. Clean the Reel Disk Shaft and put in height adjusting washers ③.
3. Be careful not to damage the Tension Band Ass'y at the time of removal and installation.
4. Be careful not to scratch the Reel Disk Shaft with the polyslider washer or the tool at the time of removal and installation.
5. After oiling (Cosmo Oil Hydro HV100) the Reel Disk Shaft, install the new Reel Disk S Ass'y and Reel Disk T Ass'y again.
6. After installation, adjust the height of the Reel Disk. **(Refer to item 1-1 of MECHANICAL ADJUSTMENTS)**
7. After installation, adjust and confirm the tension post position. **(Refer to item 1-2 of MECHANICAL ADJUSTMENTS)**

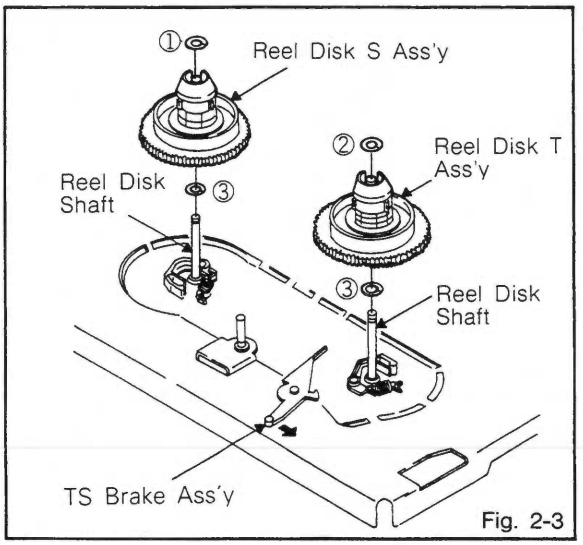


Fig. 2-3

DISASSEMBLY INSTRUCTIONS

2-4: A/C HEAD (Refer to Fig. 2-4)

1. Disconnect the 2 connectors (2 pins and 6 pins) on the A/C Head PCB.
2. Remove the screws ①, ② and ③.

NOTES
1. Do not touch the heads by any means when replacing the A/C head.
2. After replacement, confirm the following adjustments.
   a. MECHANICAL ADJUSTMENTS: ITEM 2-2
   b. MECHANICAL ADJUSTMENTS: ITEM 2-3

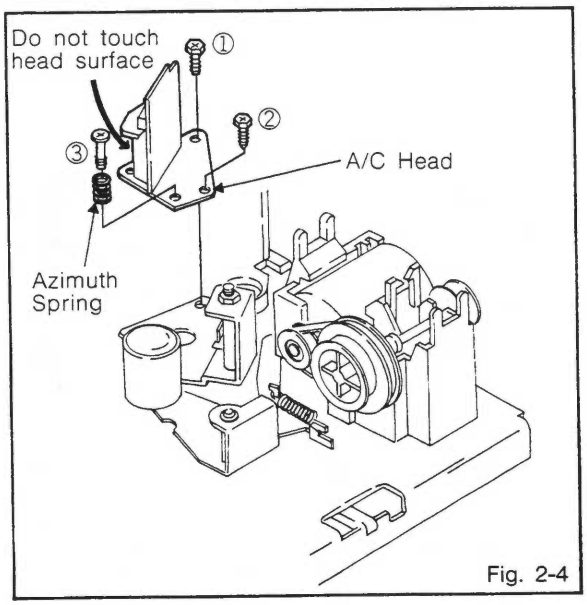


Fig. 2-4

2-5: LOADING MOTOR (Refer to Fig. 2-5)

1. Remove the lead wire in the hook of the Loading Motor Box.
2. Remove the Loading Motor Belt.
3. Remove the 2 screws ①, then remove the Loading Motor Box.
4. Remove the Front Loading Belt.
5. Remove the 2 screws ②, then lift the Loading Motor upward.
6. Remove the 2 wires soldered to the Loading Motor.

NOTES
1. Clean the pulley when replacing Front Loading Belt and Loading Motor Belt.
2. Avoid getting grease on the Loading Motor Belt and Front Loading Belt.

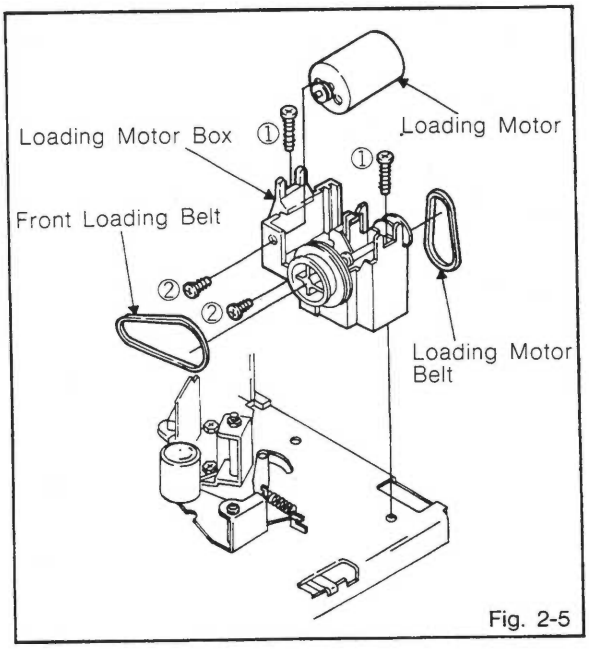


Fig. 2-5

2-6: PINCH ROLLER ARM (Refer to Fig. 2-6)

1. Remove the Pinch Roller Arm Spring.
2. Remove the polyslider washer ①.
3. Remove the Pinch Roller Arm.

NOTE
Do not touch the Pinch Roller. (Use gloves.)

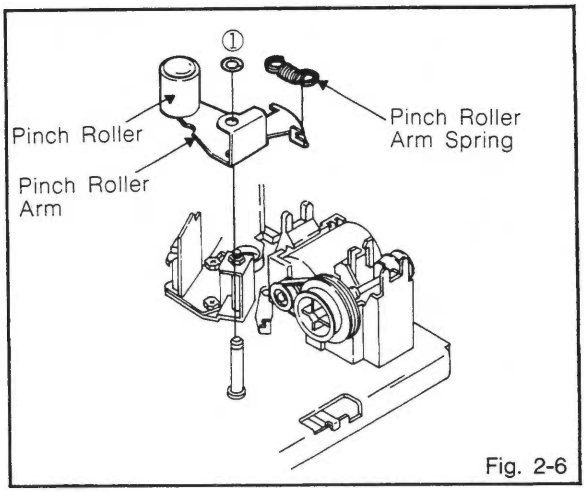


Fig. 2-6

DISASSEMBLY INSTRUCTIONS

2-7: CYLINDER UNIT (Refer to Fig. 2-7)

1. Disconnect the connector ①.
2. Disconnect the connector ②.
3. Remove the 3 screws ③, then remove the Head Amp PCB.
4. Remove the 3 screws ④, then remove the Cylinder Unit from the Main Chassis.

NOTES

1. Do not touch the surface of the Cylinder Head.
2. After replacement, confirm the following adjustment.
   MECHANICAL ADJUSTMENTS : ITEM 2-1

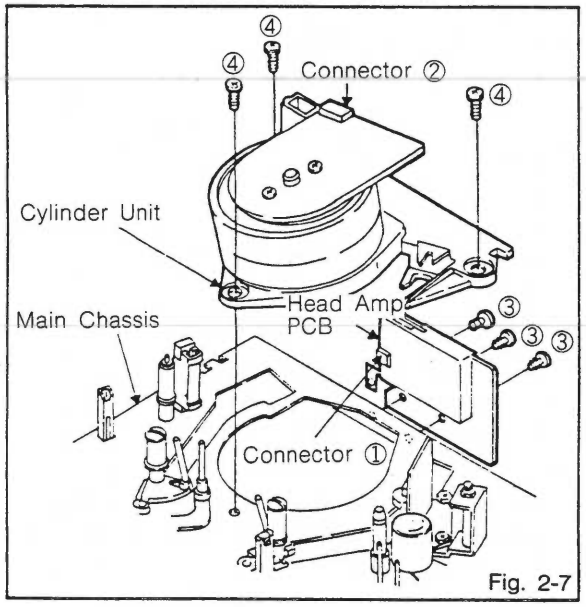


Fig. 2-7

2-8: DECK PCB (Refer to Fig. 2-8)

1. Remove the connector (9 pins) on the Capstan DD Unit.
2. Remove the 2 solder traces Ⓐ and remove the 2 screws ①.
3. Remove the Deck PCB.

NOTES

1. When installing the Deck PCB, be sure to set the Rotary Switch to the EJECT position. The EJECT position is the point where the Ⓑ tooth is aligned to Ⓒ.
2. Avoid getting grease on the Reel Belt.
3. After installation, be sure to resolder traces Ⓐ.

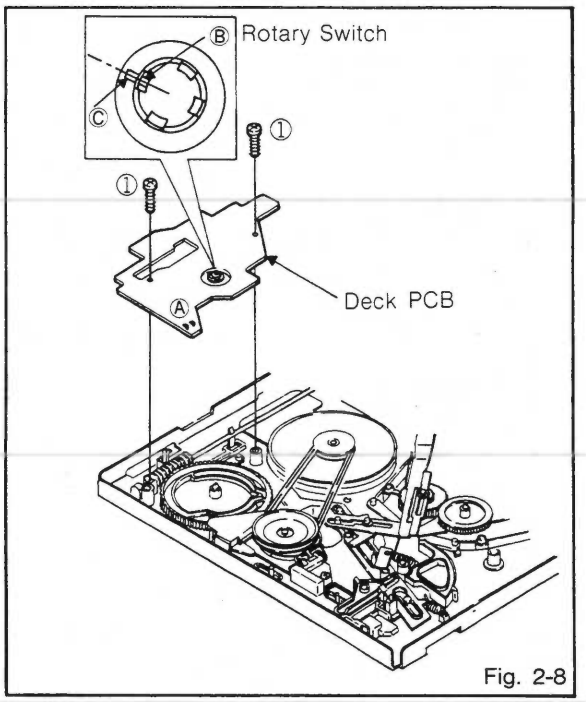


Fig. 2-8

2-9: CAPSTAN DD UNIT (Refer to Fig. 2-9-A, B)

1. Remove the Loading Motor Belt.
2. Remove the screw ①, then remove the Bracket Worm 3. **(Refer to Fig. 2-9-B)**
3. Remove the Worm.
4. Remove the 3 screws ①. **(Refer to Fig. 2-9-A)**
5. Remove the Capstan DD Unit.

NOTES

1. Do not bend the Limiter Post.
2. Use the specified screw to hold the Capstan DD Unit.
3. Install in the position where the Capstan DD Unit PCB gets up to the Ⓐ position.

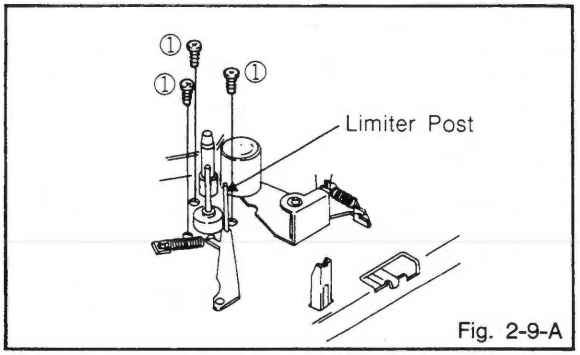


Fig. 2-9-A

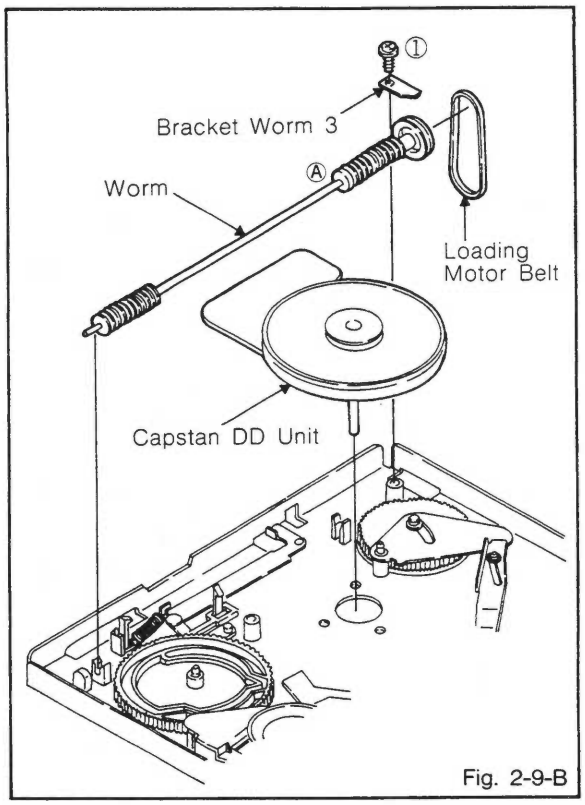


Fig. 2-9-B

2-10: CAM 1 / CAM 2
(Refer to Fig. 2-10-A, B, C)

1. Remove the E-ring ①, then remove the washer ②.
2. Remove the E-ring ③, then remove the washer ④.
3. Remove the Slide Loading 2.
4. Remove the E-ring ⑤, then remove the washer ⑥.
5. Remove the polyslider washer ⑦.
6. Remove the Loading Lever 2 Ass'y, then remove the Cam 1.
7. Remove the polyslider washer ⑧, then remove the Lever Clutch Actuator.
8. Remove the polyslider washer ⑨, then remove the Cam 2.

NOTE

Be sure to install in the EJECT position.
(Refer to Fig. 2-10-B, C)

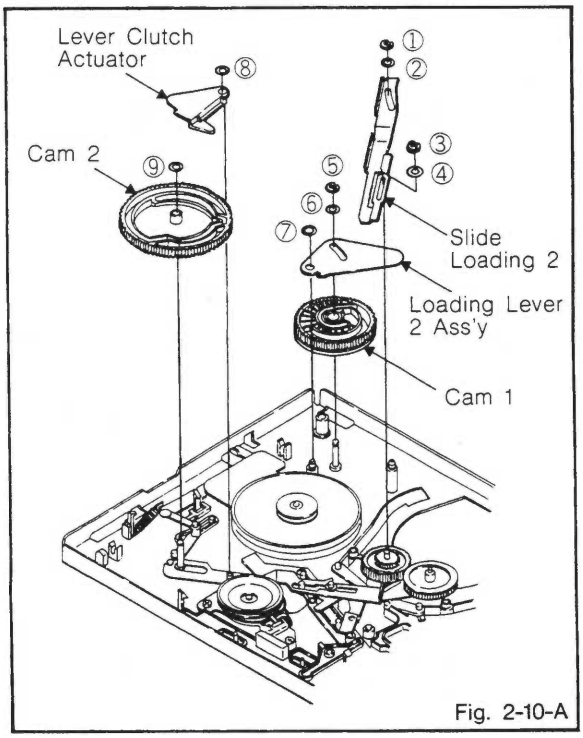


Fig. 2-10-A

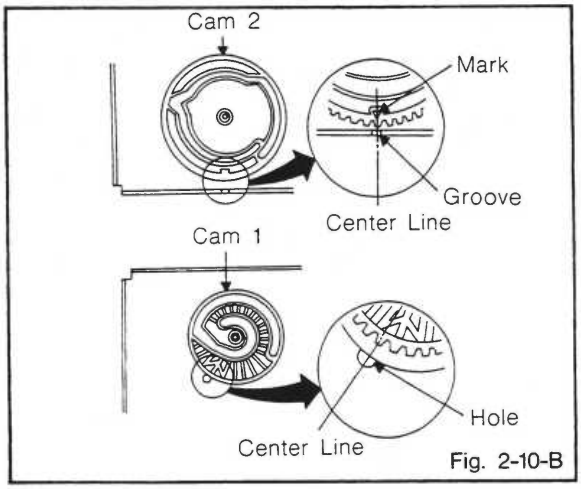


Fig. 2-10-B

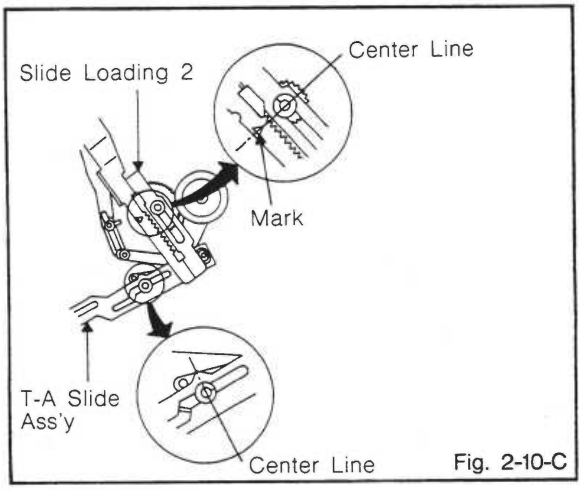


Fig. 2-10-C

2-11: LINK GEAR (R) / CLUTCH GEAR (Refer to Fig. 2-11)

1. Remove the 2 screws on the Side Bracket R2 Ass'y and remove the Side Bracket. **(Refer to FRONT LOADING EXPLODED VIEW)**
2. Remove the Link Gear (R) and Clutch Gear.

NOTES

1. When installing the Link Gear Spring R2 on the Link Gear (R), proceed in order ①, ②, ③ as shown in **Fig. 2-11.**
2. When installing the Link Gear (R), match the position of the Link Gear (R) so that the line over the two ribs on the Synchro Gear goes through the marking hole on the Link Gear (R).

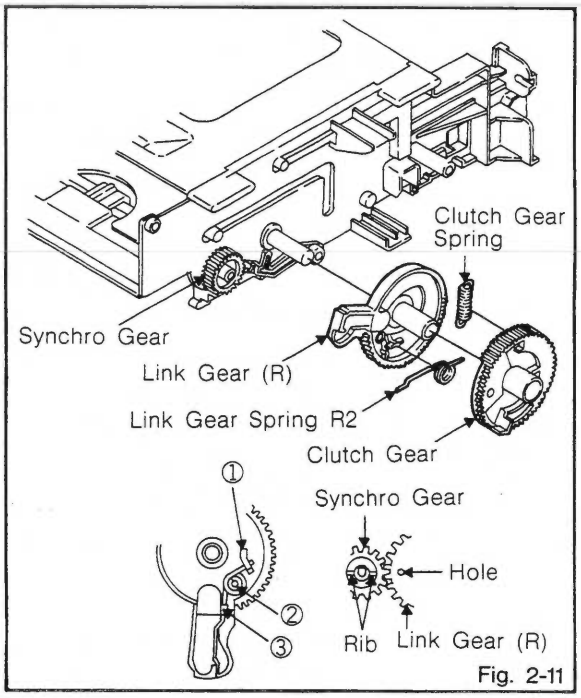


Fig. 2-11

2-12: LINK GEAR (L) (Refer to Fig. 2-12)

1. Remove the E-RING.
2. Remove the Synchro Gear.
3. Remove the Link Gear (L).

NOTES

1. When installing the Link Gear Spring (L) on the Link Gear (L), proceed in order ①, ②, ③ as shown in **Fig. 2-12.**
2. When installing the Synchro Gear, match the position of the Synchro Gear so that the line over the two ribs on the Synchro Gear goes between the marking bosses on the Link Gear (L).

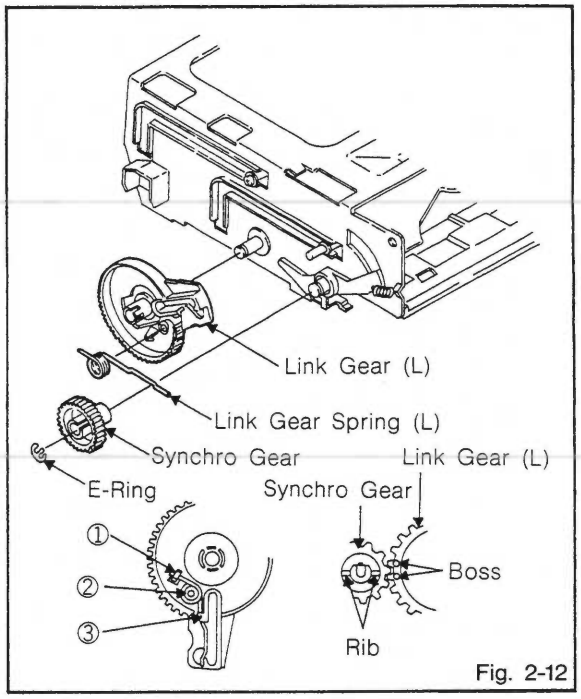


Fig. 2-12

3. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 3-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

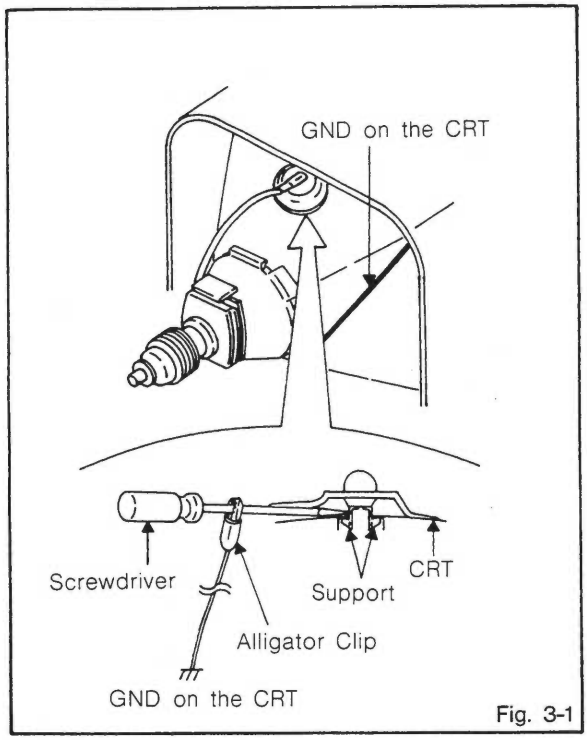


Fig. 3-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 3-2.)**

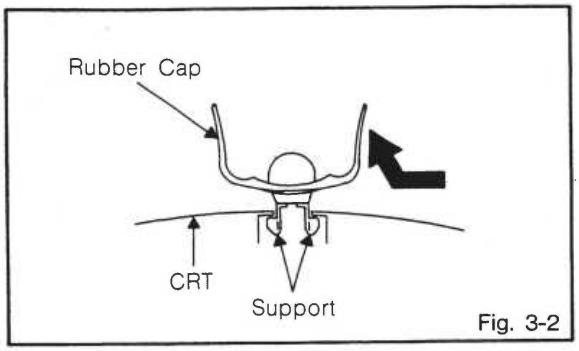


Fig. 3-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE
Take care not to damage the Rubber Cap.

INSTALLATION
1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 3-3.)**

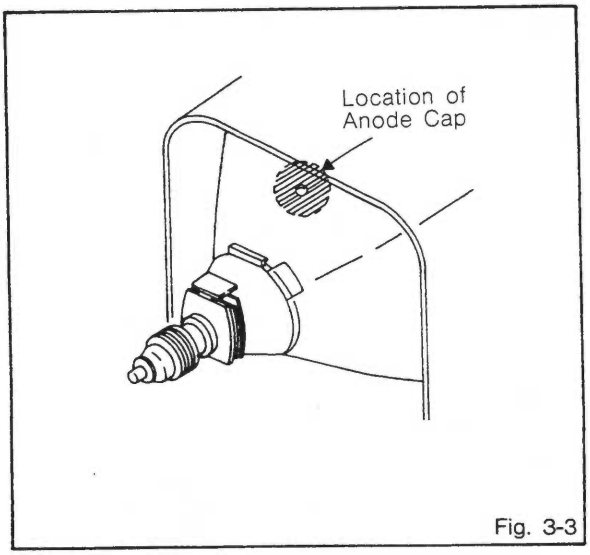


Fig. 3-3

NOTE
Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 3-4.)**

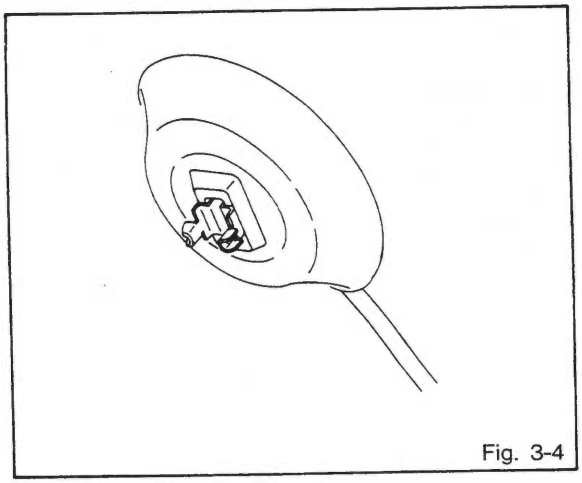


Fig. 3-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 3-5.**

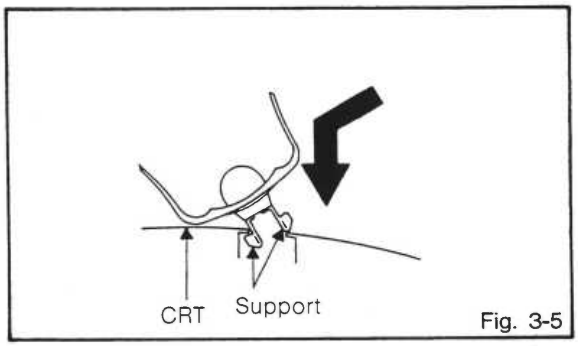


Fig. 3-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

4. REMOVAL OF DEFLECTION YOKE

REMOVAL (Refer to Fig. 4-1)

1. Loosen the screw ①.
2. Remove the Convergence · Purity Magnet in the direction of arrow Ⓐ.
3. Loosen the screw ②.
4. Remove the 3 Wedges.
5. Remove the Deflection Yoke in the direction of arrow Ⓑ.

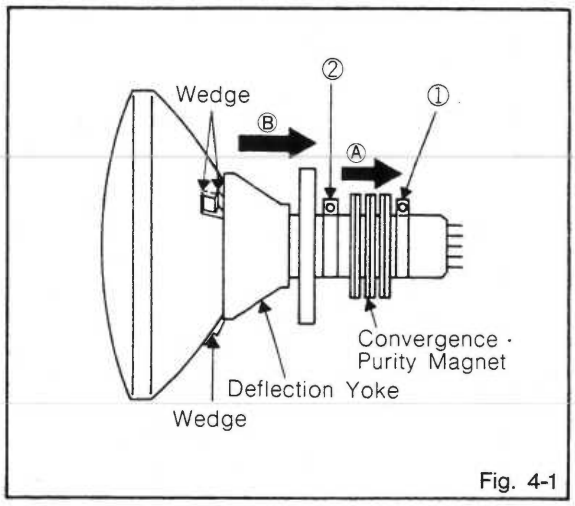


Fig. 4-1

INSTALLATION

Install new Deflection Yoke in reverse steps of REMOVAL.

NOTE

After adjusting the purity and the convergence, fix the screw ② and lock the wedges.

KEY TO ABBREVIATIONS

A	AC	: Alternating Current
	A/C	: Audio/Control
	ACC	: Automatic Color Control
	AE	: Audio Erase
	AFC	: Automatic Frequency Control
	AFT	: Automatic Fine Tuning
	AFT DET	: Automatic Fine Tuning Detect
	AGC	: Automatic Gain Control
	AMP	: Amplifier
	ANT	: Antenna
	A.PB	: Audio Playback
	APC	: Automatic Phase Control
	ASS'Y	: Assembly
	AT	: All Time
	ATT	: Attenuator
	AUTO	: Automatic
	A/V	: Audio/Video
B	BGP	: Burst Gate Pulse
	BOT	: Beginning of Tape
	BPF	: Bandpass Filter
	BRAKE SOL	: Brake Solenoid
	BUFF	: Buffer
	B/W	: Black and White
C	C	: Capacitance, Collector
	CASE	: Cassette
	CAP	: Capstan
	CARR	: Carrier
	CCD	: Charged Coupled Device
	CE	: Chip Enable
	CH	: Channel
	CLK	: Clock
	CLOCK(SY-SE)	: Clock(Syscon to Servo)
	COMB	: Combination, Comb Filter
	CONV	: Converter
	CPM	: Capstan Motor
	CTL	: Control
	CYL	: Cylinder
	CYL-M	: Cylinder-Motor
	CYL SENS	: Cylinder Sensor
D	DATA(SY-SE)	: Data(Syscon to Servo)
	dB	: Decibel
	DC	: Direct Current
	DD Unit	: Direct Drive Motor Unit
	DEMOD	: Demodulator
	DET	: Detector
	DEV	: Deviation
E	E	: Emitter
	EE	: Electric to Electric
	EF	: Emitter Follower
	EMPH	: Emphasis
	ENC	: Encoder
	ENV	: Envelope
	EOT	: End of Tape
	EQ	: Equalizer
	EXT	: External
F	F	: Fuse
	FBC	: Feed Back Clamp
	FE	: Full Erase
	FF	: Fast Forward, Flipflop
	FG	: Frequency Generator
	FL SW	: Front Loading Switch
	FM	: Frequency Modulation
	FSC	: Frequency Sub Carrier
	FWD	: Forward
G	GEN	: Generator
	GND	: Ground
H	H	: High
	H.P.F	: High Pass Filter
	H.SW	: Head Switch
	Hz	: Hertz
I	IC	: Integrated Circuit
	IF	: Intermediate Frequency
	IND	: Indicator
	INT	: Interrupt
	INV	: Inverter
K	KIL	: Killer
L	L	: Left
	LED	: Light Emitting Diode
	LIMIT AMP	: Limiter Amplifier
	LM, LDM	: Loading Motor
	LOAD	: Loading
	LP	: Long Play
	L.P.F	: Low Pass Filter
	LUMI	: Luminance
M	M	: Motor
	MAX	: Maximum
	MIN	: Minimum
	MIX	: Mixer, Mixing
	MM	: Monostable Multivibrator
	MOD	: Modulator, Modulation
	MPX	: Multiplexer, Multiplex
	MS SW	: Mech State Switch
N	NC	: Non Connection
	NR	: Noise Reduction
O	OSC	: Oscillator
	OPE	: Operation
	OR EQ	: Or Equivalent
P	PB	: Playback
	PB CTL	: Playback Control
	PB-C	: Playback-Chrominance
	PB-Y	: Playback-Luminance
	PCB	: Printed Circuit Board
	P.CON	: Power Control
	PD	: Phase Detector
	PG	: Pulse Generator
	p-p	: Peak-to-Peak
	PWM	: Pulse Width Modulation
	PWM TV	: Pulse Width Modulated Tuning Voltage
R	R	: Right
	REC	: Recording
	REC-C	: Recording-Chrominance
	REC-Y	: Recording-Luminance
	REEL BRK	: Reel Brake
	REEL S	: Reel Sensor
	REF	: Reference
	REG	: Regulated, Regulator
	REW	: Rewind
	REV	: Reverse
	RF	: Radio Frequency
	RMC	: Remote Control
	RVS	: Reverse
	RY	: Relay
S	S.CLK	: Serial Clock
	S.COM	: Sensor Common
	S.DATE	: Serial Date
	SEG	: Segment
	SEL	: Select, Selector
	SENS	: Sensor
	SER	: Search Mode
	SI	: Serial Input
	SIF	: Sound Intermediate Frequency
	SO	: Serial Output
	SOL	: Solenoid
	SP	: Standard Play
	STB	: Serial Strobe
	SW	: Switch
	SYNC	: Synchronization
	SYNC SEP	: Sync Separator, Separation
T	TR	: Transistor
	TRAC	: Tracking
	TRIC PB	: Trick Playback
	TP	: Test Point
U	UNREG	: Unregulated
V	V	: Volt
	VCO	: Voltage Controlled Oscillator
	VIF	: Video Intermediate Frequency
	VP	: Vertical Pulse, Voltage Display
	V.PB	: Video Playback
	VR	: Variable Resistor
	V.REC	: Video Recording
	VSF	: Visual Search Fast Forward
	VSR	: Visual Search Rewind
	VSS	: Voltage Super Source
	V-SYNC	: Vertical-Synchronization
	VT	: Voltage Tuning
X	X'TAL	: Crystal
Y	Y	: Luminance
	Y/C	: Luminance/Chrominance

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head	■	■	■	■	■	
Reel Belt		■		●		Clean the rubber, and parts which the rubber touches.
Front Loading Belt		■		●		
Pinch Roller	■	■	■	■	■●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band Ass'y					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■●	■	■●	■●	Clean the head

● : Replace, ■ : Clean

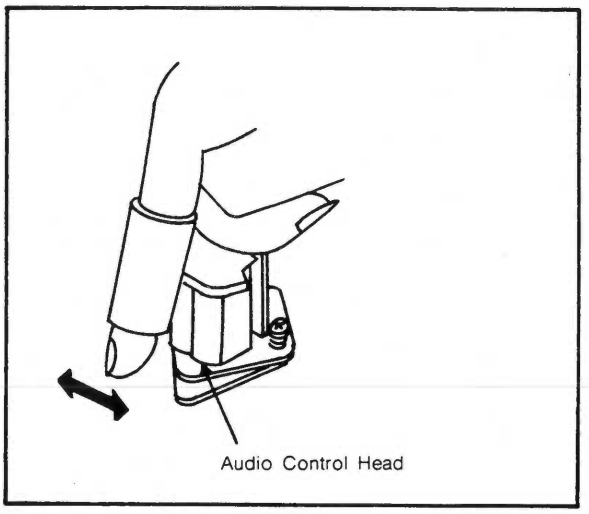
CLEANING

NOTE

- After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner.
(Refer to the figure below)



2. TAPE RUNNING SYSTEM

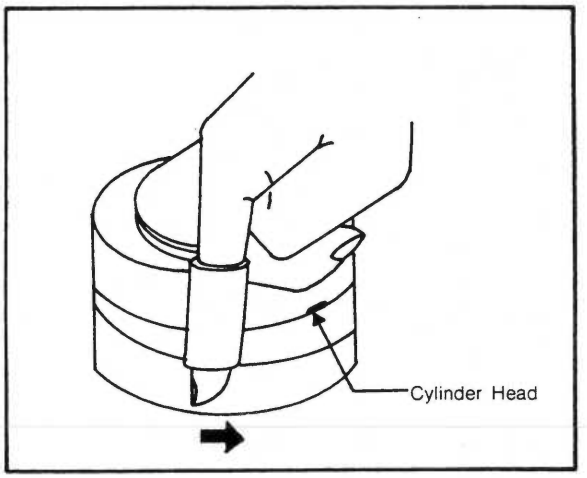
- When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow).
(Refer to the figure below)

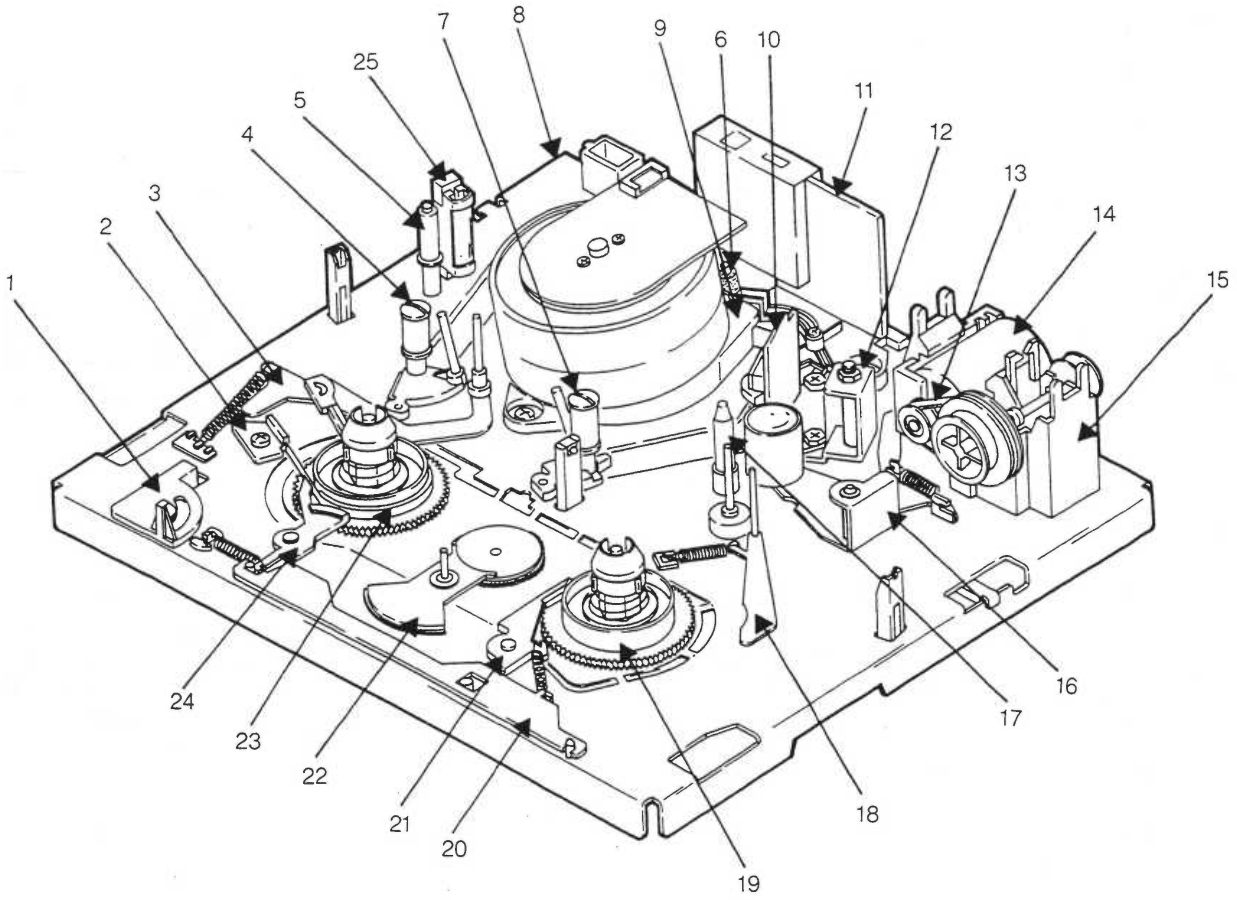
NOTE

Do not exert force against the cylinder head. Do not move the chamois up or down since this can damage the head. Always use a piece of chamois for cleaning.



DECK PART LOCATIONS

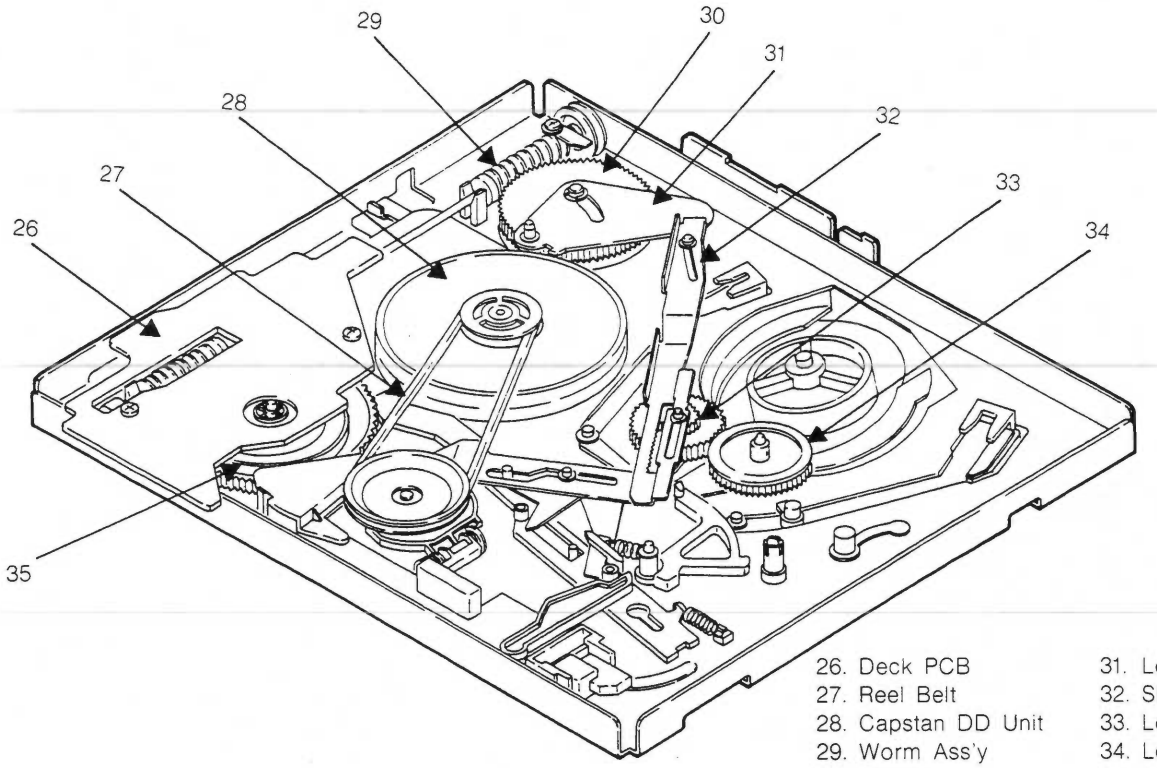
(TOP VIEW)



1. REC SW Lever
2. Tension Band Ass'y
3. Tension Arm Ass'y
4. Guide Roller Ass'y
5. P1 Post
6. Auto Head Cleaner
7. Guide Roller Ass'y
8. Main Chassis
9. Cylinder Unit
10. A/C Head
11. Head Amp PCB
12. A/C Head Base
13. Front Loading Belt
14. Loading Motor
15. Loading Motor Box Ass'y
16. Pinch Roller Arm Ass'y
17. P4 Post
18. Limiter Post Arm Ass'y
19. Reel Disk T Ass'y
20. Actuator Sub Brake
21. TS Brake 2 Ass'y
22. Idler Ass'y
23. Reel Disk S Ass'y
24. SS Brake Arm
25. Full Erase Head

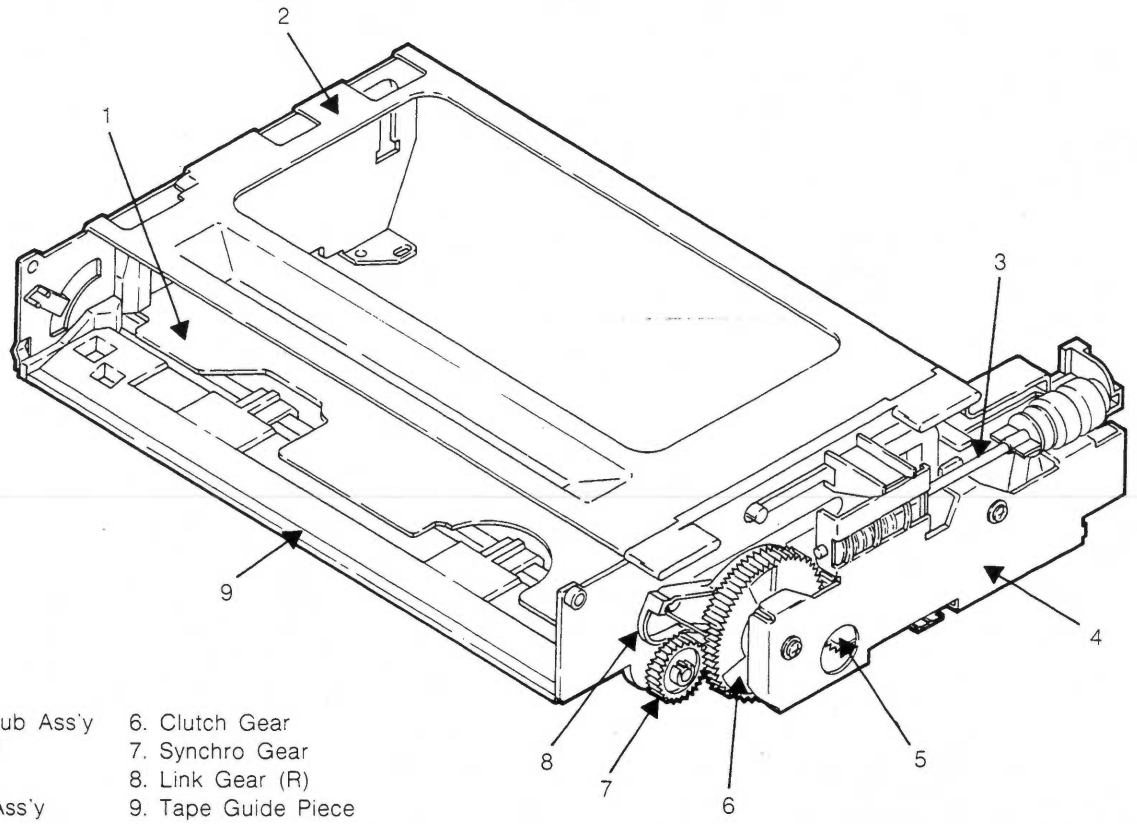
DECK PART LOCATIONS

(BOTTOM VIEW)



26. Deck PCB
27. Reel Belt
28. Capstan DD Unit
29. Worm Ass'y
30. Cam 1
31. Loading Lever 2 Ass'y
32. Slide Loading 2
33. Loading Gear T Ass'y
34. Loading Gear S Ass'y
35. Cam 2

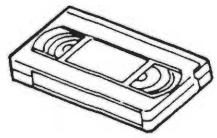
(FRONT LOADING UNIT)



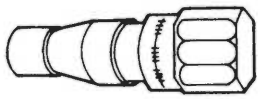
1. Cassette Holder Sub Ass'y
2. Top Bracket Ass'y
3. Worm Ass'y
4. Side Bracket R2 Ass'y
5. Wheel
6. Clutch Gear
7. Synchro Gear
8. Link Gear (R)
9. Tape Guide Piece

SERVICING FIXTURES AND TOOLS

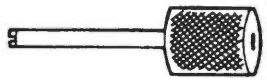
VHS Alignment Tape
JG001 (VN_2S-LI6[3])
JG001A (VN_2S-C01[3])



JG002B Adapter
JG002F Dial Torque Gauge (60~600gr/cm)
JG002G (100~1200gr/cm)

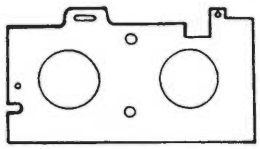


JG005 Post Adjustment Screwdriver



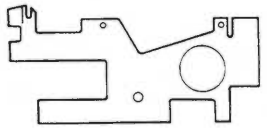
JG021A X-Nut Adjustment Screwdriver 2

JG022 Master Plane

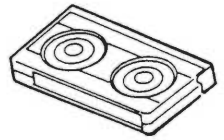


JG024 Reel Disk Height Adjustment Jig

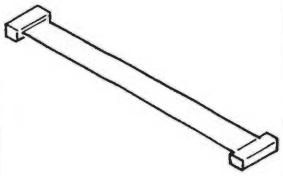
JG036 Tension Post Adjustment Jig



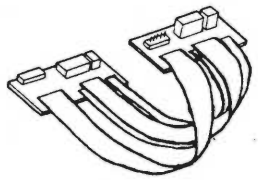
JG100 Torque Tape (VHT-103)



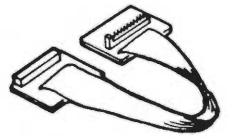
JG104C Cable



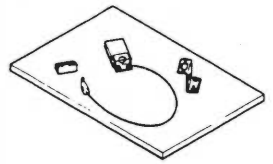
JG105G Cable



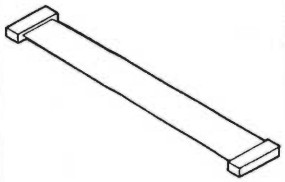
JG106 Cable



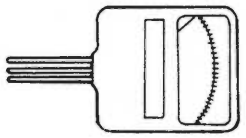
JG107 Table



JG108



Tentelometer



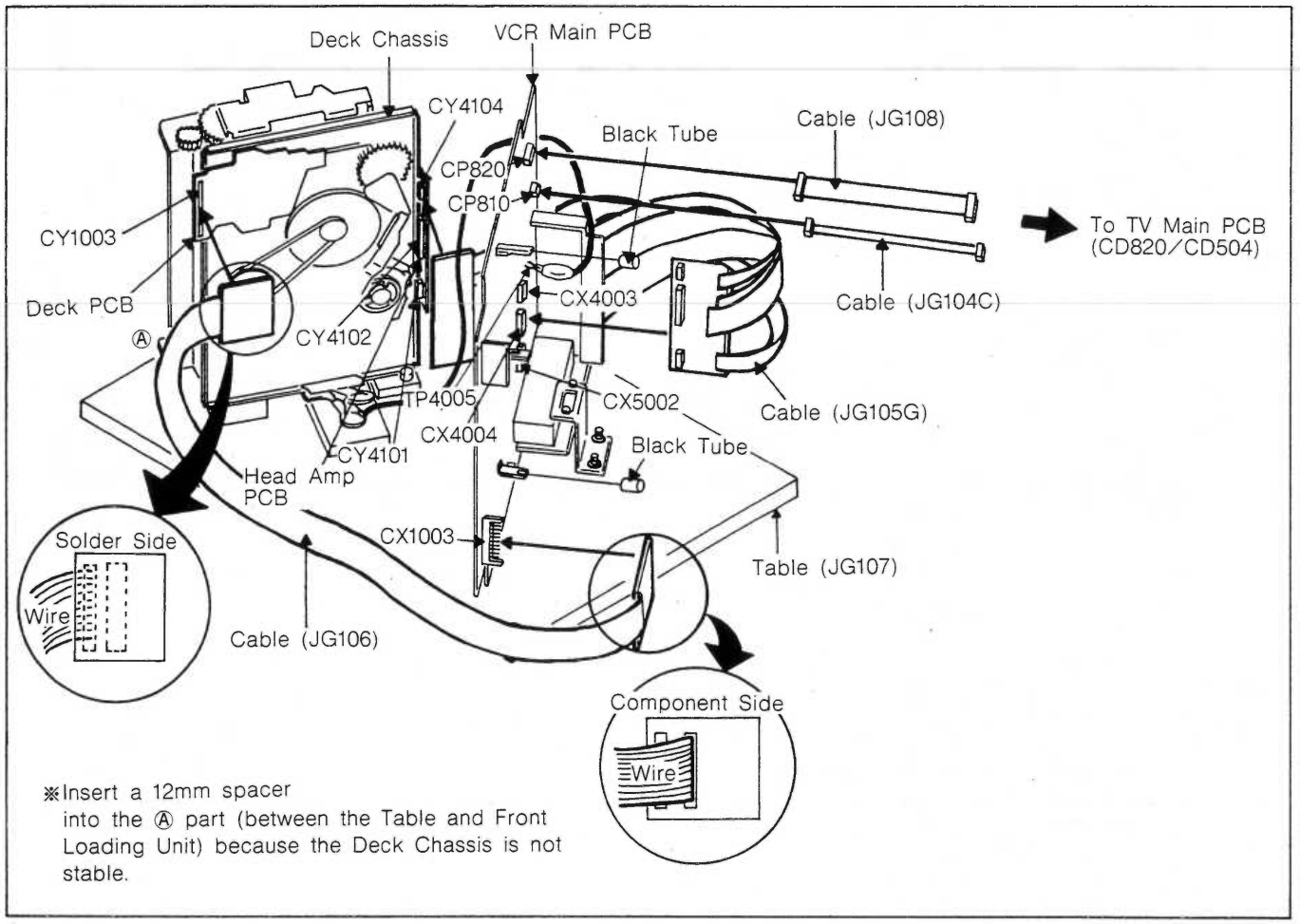
Part No.	Remarks
JG001	Monoscope, 6 KHz
JG001A	Color Bar, 1 KHz
JG002F	Playback Take Up Torque
JG002G	Fast Forward Torque, Rewind Torque, Brake Torque(Take up Reel/Supply Reel)
JG005	Guide Roller Adjustment
JG021A	X-Nut Adjustment
JG022/JG024	Reel Disk Height Adjustment
JG036	Tension Post Adjustment
JG100	Playback Back Tension Torque
JG104C	Used to connect the VCR MAIN PCB and TV MAIN PCB.
JG105G	Used to connect the HEAD AMP PCB and VCR MAIN PCB.
JG106	Used to connect the VCR MAIN PCB and DECK PCB.
JG107	Table for holding the DECK CHASSIS and VCR MAIN PCB.
JG108	Used to connect the VCR MAIN PCB and TV MAIN PCB.

PREPARATION FOR SERVICING

How to use the Servicing Fixtures

1. Remove the VCR Main PCB from the DECK Chassis.
2. Connect as shown in the below figure using the SERVICE FIXTURE.
   - Connect the VCR Main PCB to the TV Main PCB with the cable JG104C.
   - Connect the VCR Main PCB to the Head Amp PCB with the cable JG105G.
   - Connect the VCR Main PCB to the Deck PCB with the cable JG106.

   Note: When inserting cable JG106, observe the insertion figure as indicated in the circles below.
3. When you operate the Deck, cover the sensors Q1001 and Q1002 with a black tube. When you operate only the Main PCB, connect Pin 13 and Pin 17 of CX1003 to make it a short circuit.



MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTED items before starting work.

* Place an object which weighs between 350g and 500g on the Cassette Tape to keep it steady when you want to make the tape run without the front loading unit. (Do not place an object which weighs over 500g.)
* When you activate the deck without the front loading unit, place black tubes over Q1002 (BOT) and Q1001 (EOT). EOT/BOT sensor will not function in this condition. Be sure to return the deck to it's original condition after repairs are completed.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024)** on mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. Confirm that the reel disk is lower than "A" of the reel disk height adjustment jig **(JG024)** on the master plane and higher than "B" as shown in **Fig. 1-1-B**. If it is not, adjust to less than 7.5mm ±0.2mm with the height adjustment washer.
4. Perform the same adjustment for the other reel.

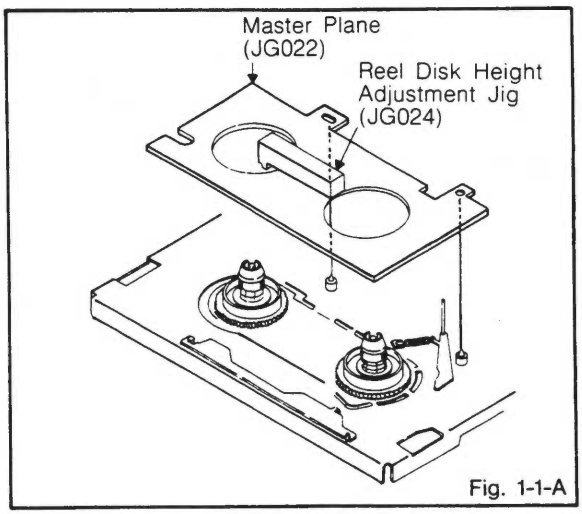


Fig. 1-1-A

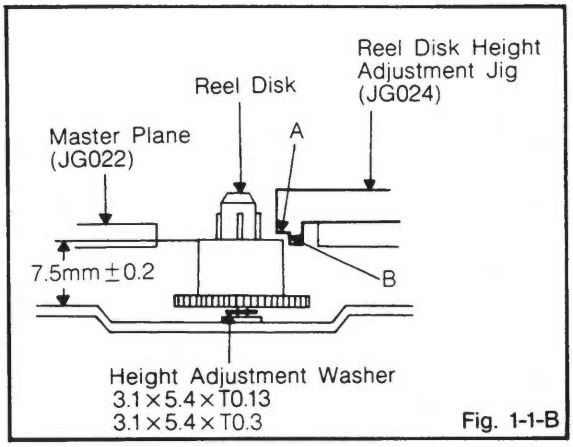


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Turn on the power and set to the PLAY mode by using the tension post adjustment jig **(JG036)**.
2. Move the tension band adjuster to the "A" or the "B" direction to set tension post adjustment jig red line to the round center of the tension post. **(Refer to Fig. 1-2)**
   When you don't use the jig **(JG036)**, adjust tension arm so that the measurement from the round center of the P1 post to the round center of the tension post is 2.5mm±0.5mm. **(Refer to Fig. 1-2)**
3. Confirm that the video tape is not curling at the flange of P1 post or is not running on flanges.

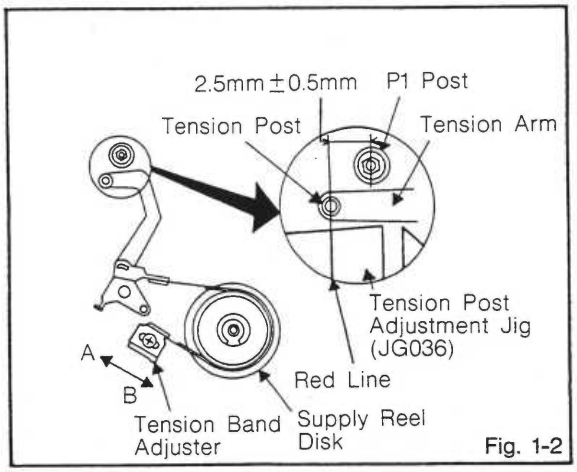


Fig. 1-2

1-3: CONFIRMATION AND ADJUSTMENT OF BACK TENSION ON PLAYBACK

1. Load a video tape recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3-A**. Confirm the value is within 25~35gr/cm at this time.
3. Adjust when it does not satisfy the above items. Set the tension arm spring to "A" direction when the torque meter indicates more than 35gr/cm. **(Refer to Fig. 1-3-B)**
   Set the tension arm spring to "B" direction when the torque meter indicates less than 25gr/cm. **(Refer to Fig. 1-3-B)**

※ IN CASE OF USING A CASSETTE TYPE TORQUE TAPE.

1. After adjustment, confirm and adjust the tension post position **(Refer to item 1-2)** for the tension arm, install the cassette type torque tape **(JG100)** and set to the PLAY mode.
2. Confirm that the left hand side tension value of the torque tape is 45~60gr/cm for the standard mode tape.

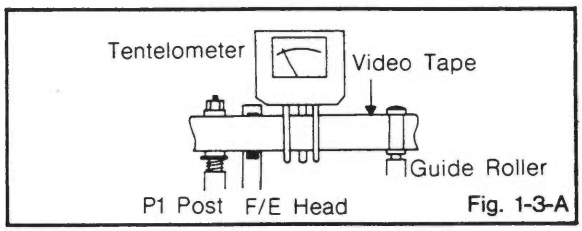


Fig. 1-3-A

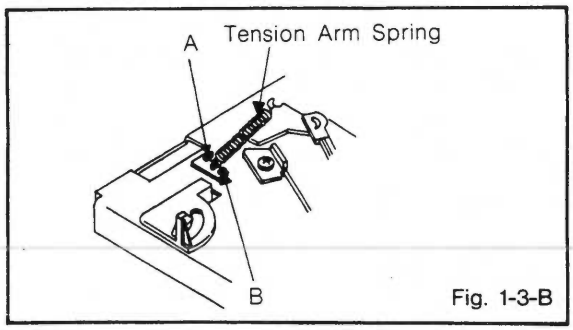


Fig. 1-3-B

1-4: CONFIRMATION OF FAST FORWARD TORQUE

1. Set torque gauge **(JG002G)** on take-up reel disk, and place unit in FAST FORWARD mode. **(Refer to Fig. 1-4)**
2. Confirm that torque is more than 800gr/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the FAST FORWARD button and the reel disk will begin to turn.

1-5: CONFIRMATION OF REWIND TORQUE

1. Operate within 4 or 5 seconds after the reel disk begins to turn.
2. Set torque gauge **(JG002G)** on supply reel disk, and place the unit in REWIND mode. **(Refer to Fig. 1-4)**
3. Confirm that torque is more than 800gr/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the REWIND button and the reel disk will begin to turn.

1-6: CONFIRMATION OF PLAYBACK TAKE-UP TORQUE

1. Set the torque gauge **(JG002F)** on the take up reel disk, then check PB mode.
   Or
   Load the cassette type torque tape **(JG100)**, then set it to PB mode.
2. Make sure that the torque covers the range, 60~150gr/cm.

1-7: CONFIRMATION OF REEL BRAKE TORQUE

(Take-Up Reel Brake) **(Refer to Fig. 1-4)**

1. Set to STOP mode.
2. Set the torque gauge **(JG002G)** to the take-up reel and turn it counterclockwise.
3. Confirm that it is more than 200gr/cm at that time.

(Supply Reel Brake) **(Refer to Fig. 1-4)**

1. Set to STOP mode.
2. Set the torque gauge **(JG002G)** to the supply reel and turn it clockwise.
3. Confirm that it is more than 200gr/cm at that time.

NOTE

Separate the idler from the reel and confirm the brake torque.

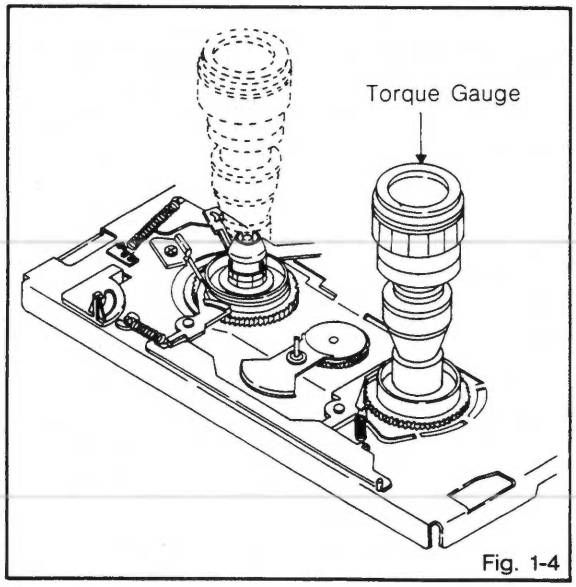


Fig. 1-4

NOTE

If the torque value checked is out of tolerance, replace the appropriate parts as follows.

Check Items	Replace Parts
1-4	Idler Ass'y or Reel Belt
1-5	Idler Ass'y or Reel Belt
1-6	Idler Ass'y or Reel Belt or Clutch Ass'y
1-7	Main Brake T Ass'y or Main Brake S Ass'y

2. TAPE RUNNING CONFIRMATION AND ADJUSTMENT

Tape running is adjusted precisely at the factory. Normally, it is not necessary to make adjustments. It is necessary to confirm and make adjustments when the parts of the tape running mechanism are replaced because of extensive usage or failure.

2-1: GUIDE ROLLER

1. Connect CH-1 on the oscilloscope to **TP4002 (PB Envelope)** and CH-2 to **TP4004 (SW Pulse)**.
2. Insert the VHS alignment tape **(JG001)** into the unit.
3. Adjust the Tracking to center position as described below.
   ① Set the TV/VCR to the reset mode and sound to minimum.
   ② Press the volume down key (▽) on the set and the channel button (5) on the remote control simultaneously to adjust the Tracking to center position.
4. Trigger with SW pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
5. Adjust the guide roller height while observing the envelope, and make the envelope flat. Adjust the envelope so that the flatness will not be affected even when the tracking control button is pressed. (Use the adjustment screwdriver **JG005**).

6. Press and hold the tracking control button and at the point that the envelope waveform starts to reduce, adjust the envelope so that its A : B ratio is better than 3 : 2. **(Refer to Fig. 2-1-B)**
7. Adjust the PG shifter **(ELECTRICAL ADJUSTMENTS : ITEM 3-1)** in the PLAY mode.

NOTE

After adjustment, confirm and adjust A/C head tilt. **(Refer to item 2-2)**

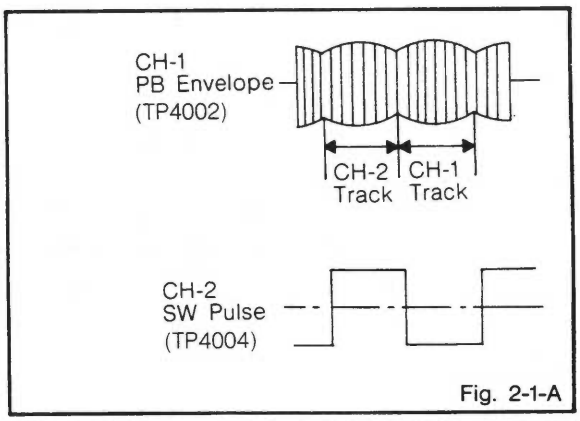


Fig. 2-1-A

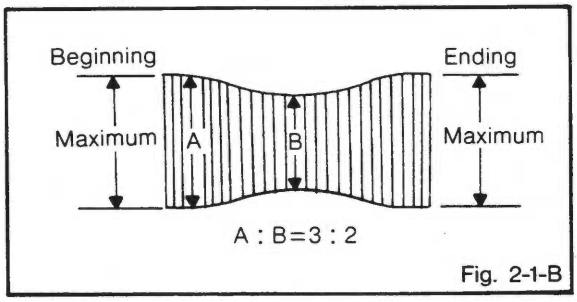


Fig. 2-1-B

2-2: CONFIRMATION AND ADJUSTMENT OF A/C HEAD TILT

When the tape is running abnormally, perform the following adjustments.

1. Insert a new tape and play it back.
2. Confirm that there is no crease on the tape between the P4 post and guide roller(R) and the tape is running smoothly. (It is absolutely impossible to get satisfactory sound if the tape is distorted between the A/C head and P4 post.)
3. If the tape still does not run smoothly, turn the screw ① and adjust the tilt of the A/C head. **(Refer to Fig. 2-2)**

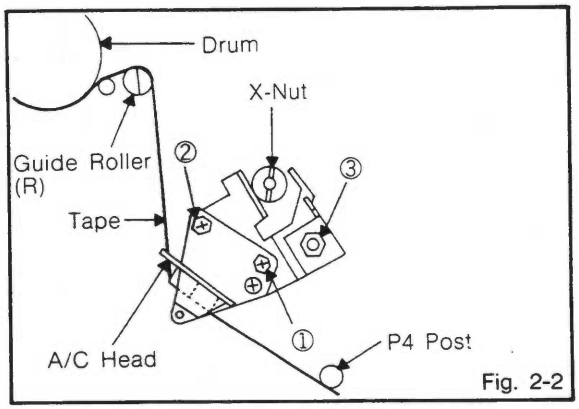


Fig. 2-2

2-3: ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH

1. Play back a VHS alignment tape **(JG001)** and observe the waveform at the audio output terminal.
2. Turn the screw ② slowly to change the azimuth of the A/C head. Adjust the azimuth so that the audio output becomes maximum. **(Refer to Fig. 2-2)**
3. Adjust the nut ③, **(Refer to Fig. 2-2)** until the height of the A/C head reaches the position against the tape as shown in **Fig. 2-3.**

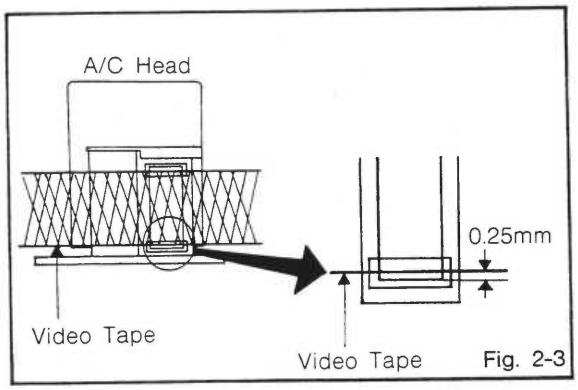


Fig. 2-3

2-4: TAPE RUNNING ADJUSTMENT

1. Adjust the height of reel disk. **(Refer to item 1-1)**
2. Confirm and adjust tension post position. **(Refer to item 1-2)**
3. Adjust the guide roller. **(Refer to item 2-1)**
4. Adjust the A/C head tilt. **(Refer to item 2-2)**
5. Adjust the A/C head height and azimuth. **(Refer to item 2-3)**
6. Connect CH-1 on the oscilloscope to **TP4002** and CH-2 to **TP4004**. Insert the VHS alignment tape **(JG001A)** into the unit. Set the tracking control to the center position. **(Refer to item 2-1, NO. 3)** Turn the X-nut using the X-nut adjustment screwdriver 2 **(JG021A) (Refer to Fig. 2-2)**. Adjust the X-nut for the envelope to be maximum. **(Refer to Fig. 2-1-A)**

(VCR SECTION)

3. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION
Inferior silicon grease can damage IC's and transistors. When replacing IC's or transistors, use only specified silicon grease (YG6260M).
Remove all old silicon before applying new silicon.

3-1: COMB FILTER

CONDITIONS
MODE-STOP
Input Signal-NTSC Color Bar (VIDEO IN JACK)

INSTRUCTIONS
1. Connect the color bar generator to **VIDEO IN JACK**.
2. Connect CH-1 on the oscilloscope to **TP4201** and CH-2 to **TP4001**.
3. Adjust **VR4001** so that the synchronized section of the **TP4001** output waveform is minimum. **(Refer to Fig. 3-1)**

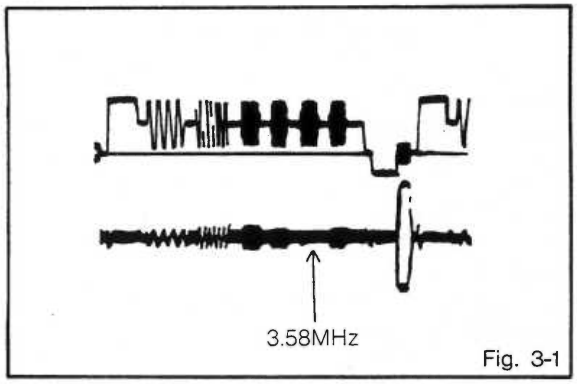


Fig. 3-1

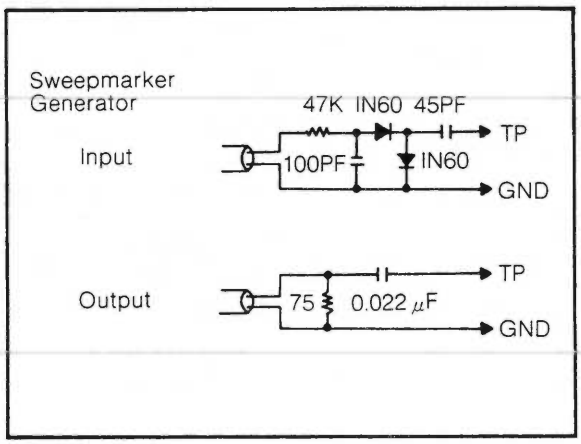
3-2: PLAYBACK AUDIO LEVEL

CONDITIONS
MODE-Self (RECORD and PLAYBACK) (SP MODE)
Input Signal-Audio Signal : 1KHz, 300mVrms (AUDIO IN JACK)
Video Signal : NTSC Color Bar (VIDEO IN JACK)

NOTE
AUDIO OUT JACK of the unit should be terminated with 47K ohm load.

INSTRUCTIONS
1. Connect the color bar generator to **VIDEO IN JACK**.
2. Connect the audio generator to **AUDIO IN JACK**.
3. Connect the AC voltmeter to **AUDIO OUT JACK**.
4. After the input of audio signal and video signal, proceed with the recording.
5. Play back the recorded section and adjust **VR5001** so that the AC voltmeter value is 390±10mVrms.

NOTE
For adjusting of VCO, connect input and output terminals of the sweepmarker generator to the circuit as shown below, then adjust it.



3-3: VCO

CONDITION
MODE-STOP

INSTRUCTIONS
1. Connect the output of sweepmarker generator to **IC6001 side of R6009**.
2. Connect the input of sweepmarker generator to **pin 17 on IC6001**.
3. Connect a 10K ohm variable resistor to IF AGC terminal **(pin 4 on IC6001)**, 12V line and ground, then adjust to make the waveform of the oscilloscope readable.

4. Adjust **L6010** until the waveform marker (45.75MHz) becomes as shown in **Fig. 3-2**.

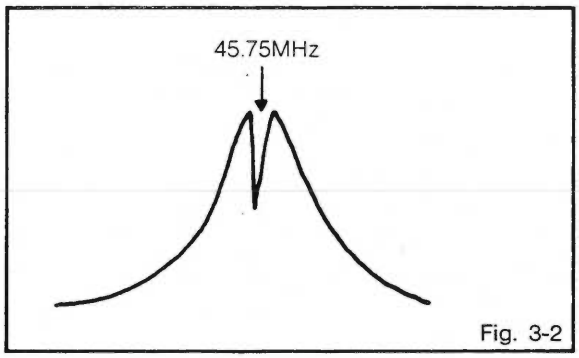


Fig. 3-2

ELECTRICAL ADJUSTMENTS

3-4: AFT

CONDITIONS
MODE-STOP
TV/CATV SELECT SW : TV POSITION
Input Signal : Monochrome Pattern (Antenna In Jack)

INSTRUCTIONS
1. Tune to B/W channel.
2. Connect the DC voltmeter to **TP6001**.
3. Adjust **L6008** so that the voltage is equal to 2.9±0.2V.

3-5: RF AGC

CONDITIONS
MODE-STOP
TV/CATV SELECT SW : TV POSITION
Input Signal : Monochrome Pattern (Antenna In Jack)

INSTRUCTIONS
1. Tune to B/W channel.
2. Connect the DC voltmeter to **TP6002**.
3. Set input field strength to 80dBμ.
4. Adjust **VR6001** so that the voltage is equal to 4.3±0.1V.

3-6: COLOR LEVEL

CONDITIONS
MODE-STOP
TV/CATV SELECT SW : TV POSITION
Input Signal : NTSC Color Bar (Antenna In Jack)

INSTRUCTIONS
1. Receive a Color Bar from Antenna In Jack.
2. Connect the oscilloscope to **TP4201**.
3. Adjust **VR6002** so that the magenta level is 45±2% when Y-level is 100%.
(Refer to Fig. 3-3)

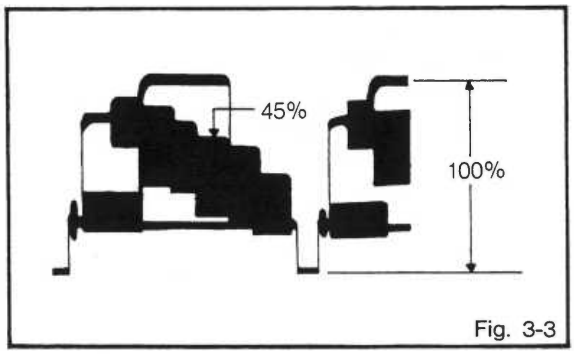


Fig. 3-3

3-7: CLOCK

CONDITIONS
MODE-STOP
POWER ON
CLOCK SET

NOTE
Quartz timer should be supplied with power for at least 30 minutes before the adjustment.

INSTRUCTIONS
1. Put the detectable area of quartz timer close to **X101**.
2. Adjust **TC101** so that the difference is within 0.15 sec.

3-8: PG SHIFTER

INSTRUCTIONS
1. Set the TV/VCR to the reset mode and sound to minimum.
2. Press the **Volume Down Key** on the set and **Channel Button (3)** on the remote control simultaneously to make the both leading and trailing edges of Head Switching pulse 6.5±0.5 (H).

ELECTRICAL ADJUSTMENTS

(TV SECTION)

4. BASIC ADJUSTMENTS

4-1: CUT OFF

1. Receive the color bar pattern.
2. Using the remote control, set brightness and contrast to minimum position.
3. Connect the oscilloscope to **TP024**.
4. Adjust the screen control until voltage is **140VDC** (Refer to Fig. 4-1)

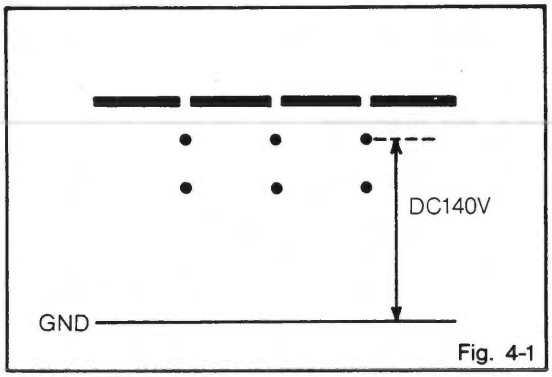


Fig. 4-1

4-2: FOCUS

1. Receive the broadcasting signal.
2. Adjust the focus control until picture is distinct.

4-3: HORIZONTAL SIZE

1. Receive the monochrome pattern.
2. Using the remote control, set the brightness and contrast to maximum position.
3. Adjust **VR501** until the center of crosshatch is more square.

4-4: VERTICAL SIZE

1. Receive the monochrome pattern.
2. Using the remote control, set the brightness and contrast to maximum position.
3. Adjust **VR402** until the center of crosshatch is more squarer.

4-5: VERTICAL POSITION

1. Receive the color bar pattern.
2. Adjust **VR403** until the horizontal line of the color bar comes to approximate center of the CRT.

4-6: HORIZONTAL POSITION

1. Receive the color bar pattern.
2. Adjust **VR651** on VCR Main PCB until the color width of both screen edges are equal.
3. Receive broadcasting signal, then confirm picture is normal.

4-7: CONTRAST, BRIGHT, TINT AND COLOR

On-Screen Display Adjustment

1. Set the TV/VCR to the reset mode and sound to minimum.
2. Press the VOL. DOWN Key (▽) on the set and the Channel button (1) on the remote control simultaneously to display adjustment mode on the screen as shown in **Fig. 4-2**.

NOTE

Use the 1 - 8 keys on the remote control to select the options shown in **Fig. 4-2**.
Press the 8 key to end the adjustments.

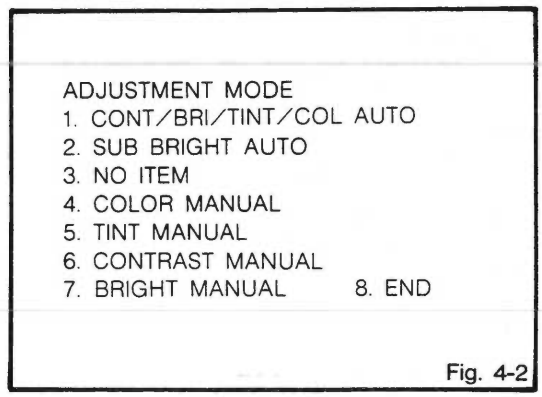


Fig. 4-2

4-7-A: CONTRAST

1. Receive the color bar pattern.
2. Activate the adjustment mode display and press the 6 key.
3. Press the VOL. UP/DOWN key on the remote control until the CONTRAST level is in the center position.

4-7-B: BRIGHT

1. Receive the monochrome pattern.
2. Activate the adjustment mode display and press the 7 key.
3. Press the VOL. UP/DOWN key on the remote control until 0% of gray scale will begins to lighten.

4-7-C: TINT

1. Receive the color bar pattern.
2. Using the remote control, set the brightness and color to center position.
3. Using the remote control, set the contrast to maximum position.
4. Connect the oscilloscope to **TP023**.
5. Activate the adjustment mode display and press the 5 key.
6. Press the VOL. UP/DOWN key on the remote control until the waveform becomes as shown in **Fig. 4-3**.

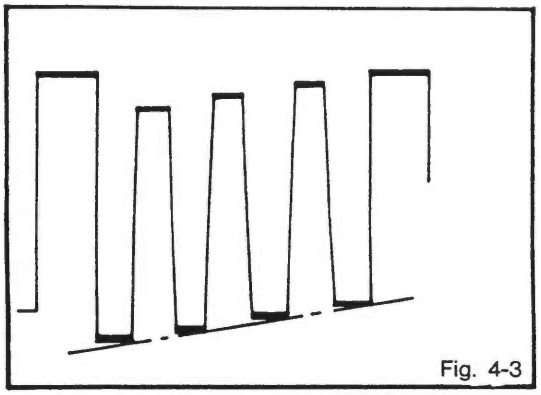


Fig. 4-3

4-7-D: COLOR

1. Receive the color bar pattern.
2. Using the remote control, set the brightness and tint to center position.
3. Using the remote control, set the contrast to maximum position.
4. Connect the oscilloscope to **TP022**.
5. Activate the adjustment mode display and press the 4 key.
6. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
7. Press the VOL. UP/DOWN key on the remote control until the red color level is adjusted to 110% of the white level.
   (Refer to Fig. 4-4)

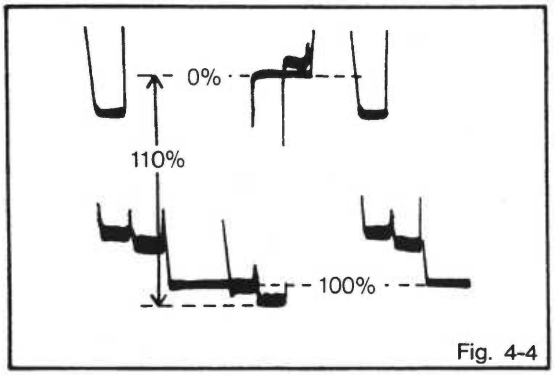


Fig. 4-4

4-8: OSD POSITION

1. Receive the TEXT pattern.
2. Set the TV/VCR to the reset mode and sound to minimum.
3. Press the Volume Down key (▽) on the set and Channel Button (2) on the remote control simultaneously until the right white area on the TEXT screen is equal to the left white area. white area.

5. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

5-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position.
   (Refer to Fig. 5-1)
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from color bar generator.
3. Slide the deflection yoke until it touches the funnel side on the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

ELECTRICAL ADJUSTMENTS

5-2: PURITY

NOTE

Adjust after performing adjustments in section 5-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
3. Adjust the pair of purity magnets so the color at ends is equally wide.
4. Move the deflection yoke backward (to neck side) slowly, and stop it at the position where the whole screen is green.
5. Confirm red and blue colors.
6. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

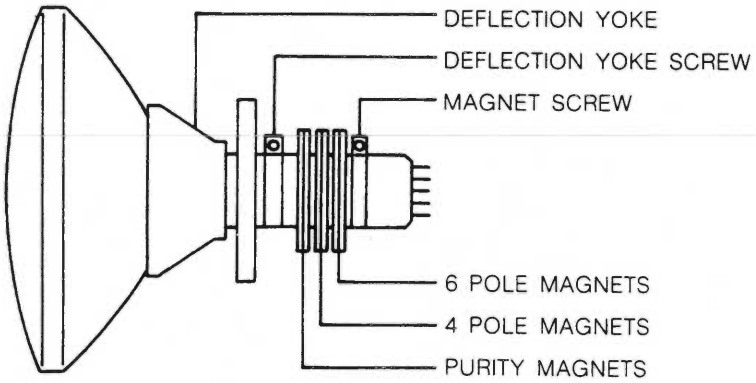


Fig. 5-1

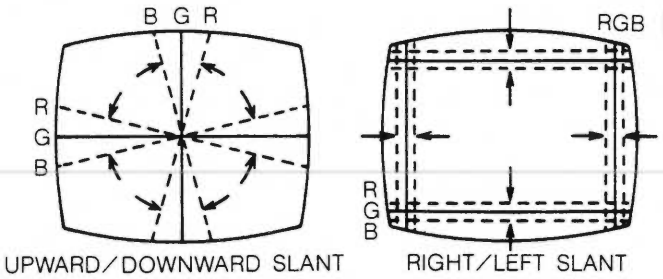


Fig. 5-2-a

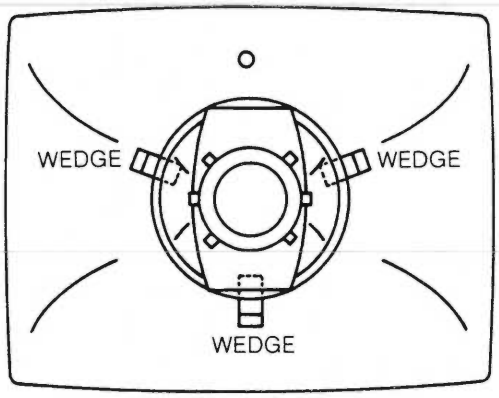


Fig. 5-2-b

5-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 5-2.

1. Receive the crosshatch pattern from color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

5-4: DYNAMIC CONVERGENCE

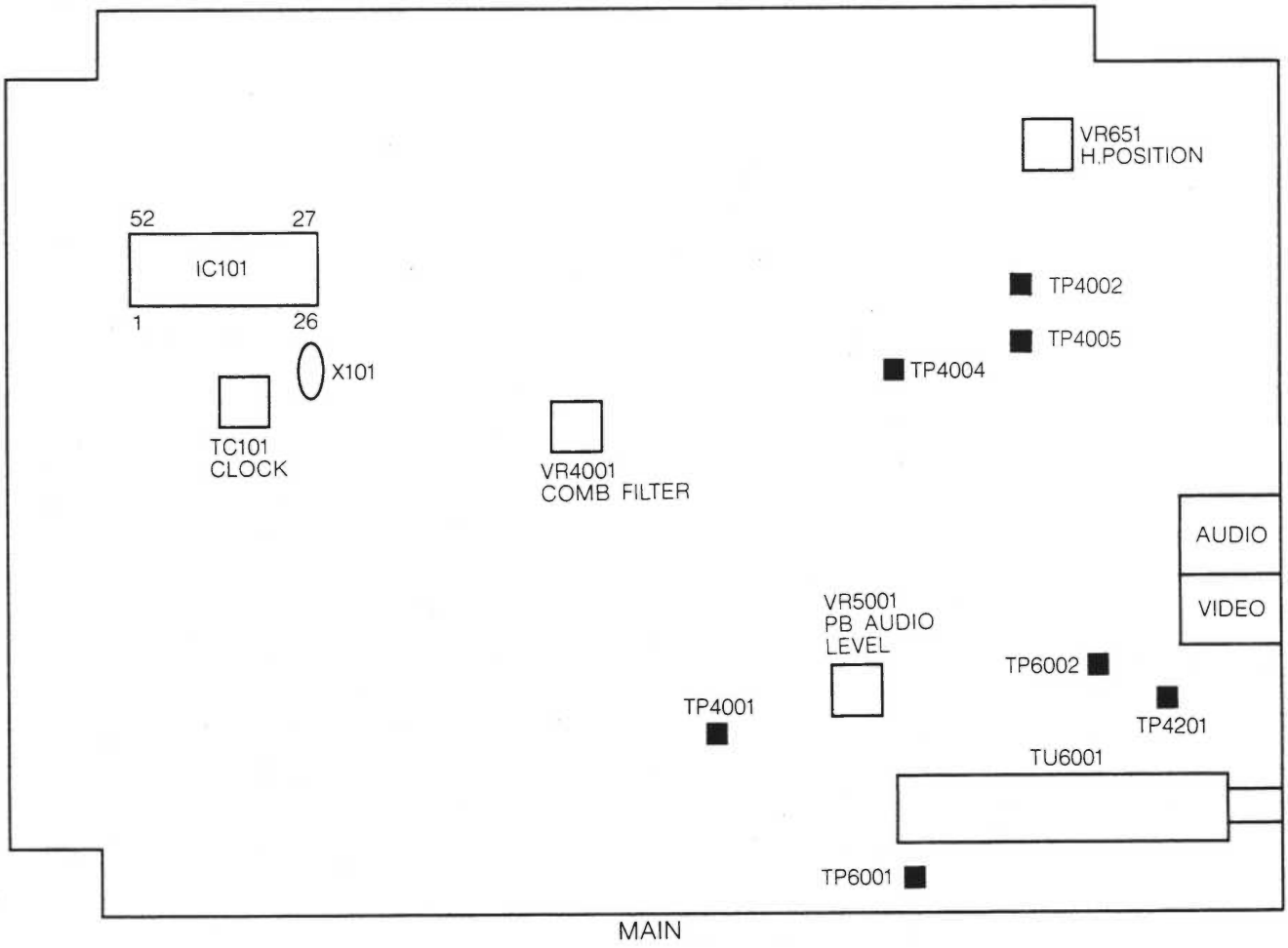
NOTE

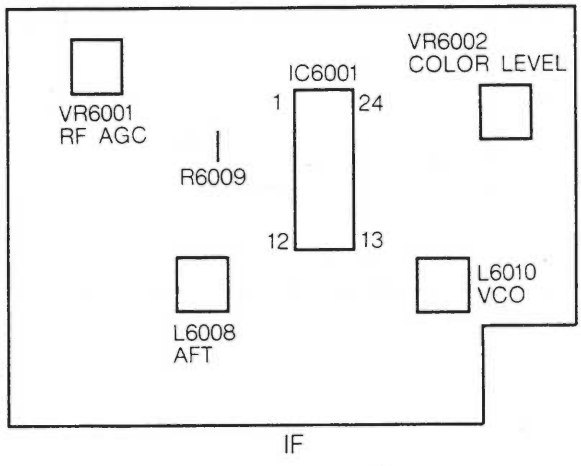
Adjust after performing adjustments in section 5-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 5-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 5-2-b)**

MAJOR COMPONENTS LOCATION GUIDE

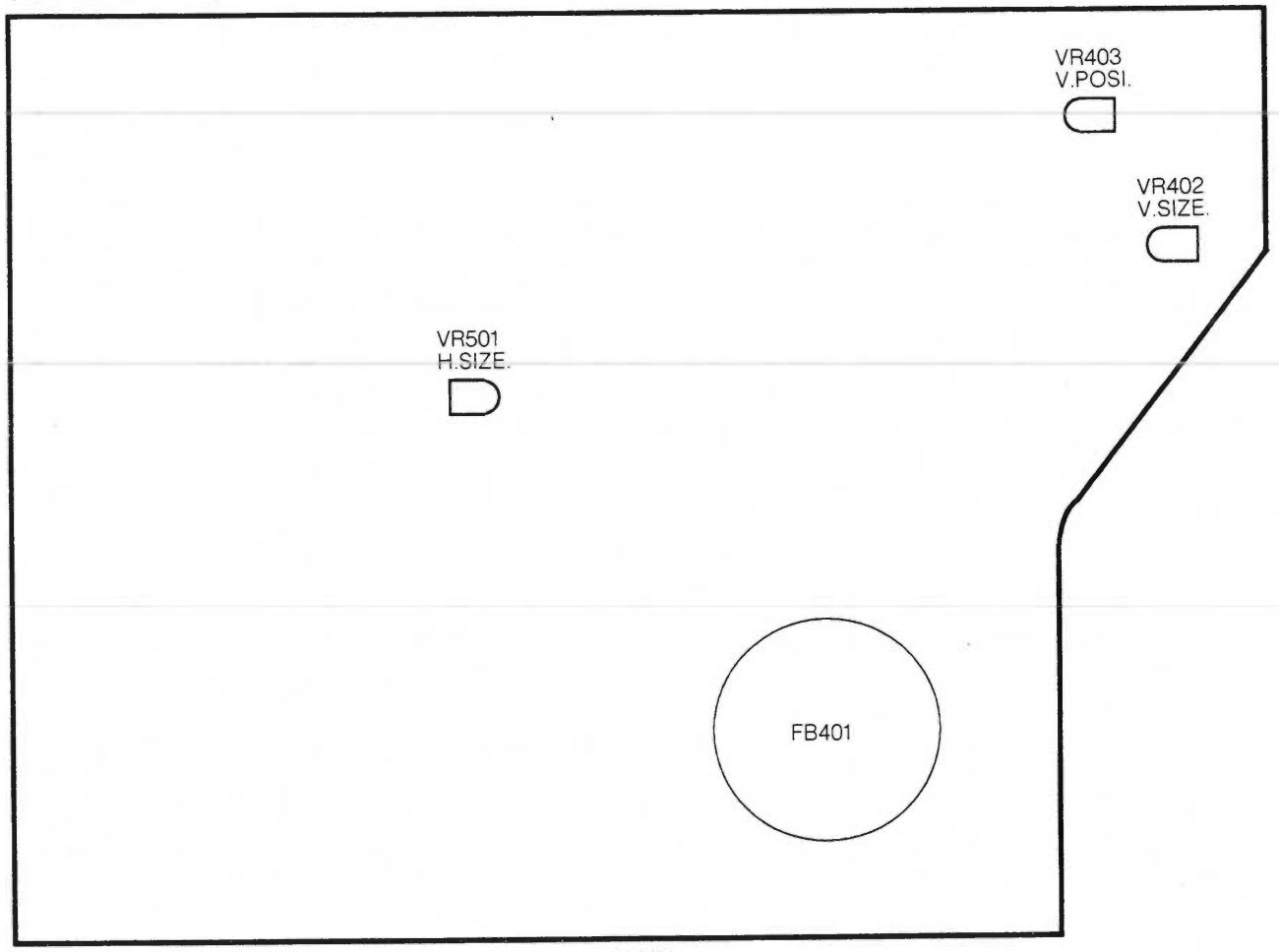
(VCR SECTION)



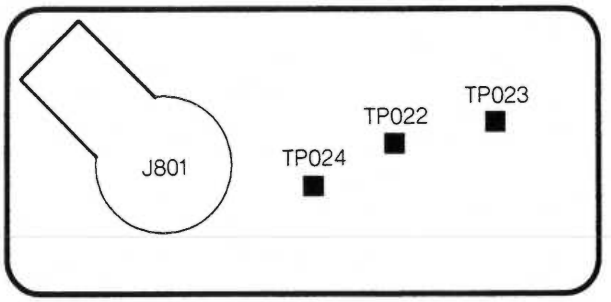


MAJOR COMPONENT LOCATION GUIDE

(TV SECTION)



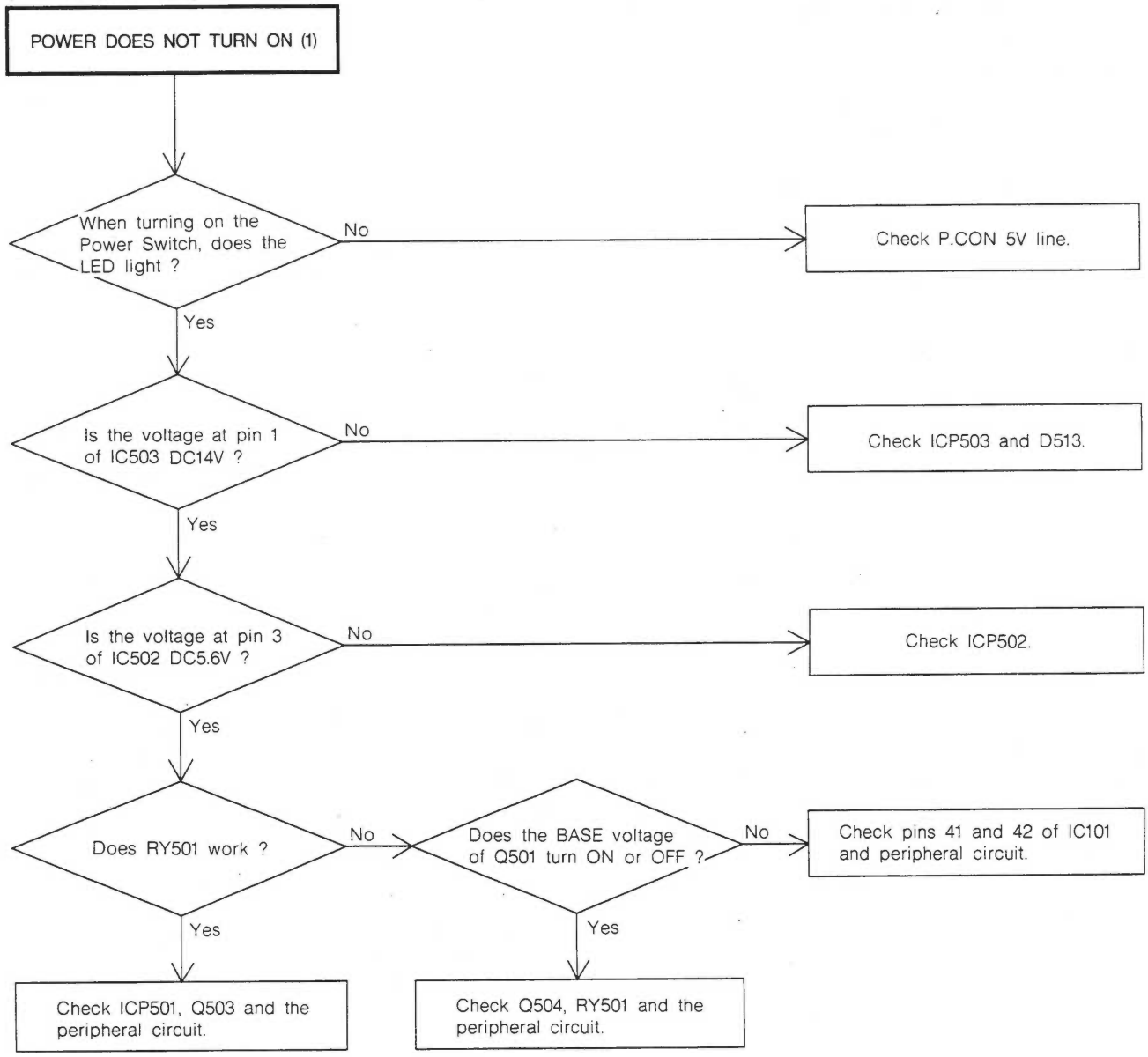
MAIN



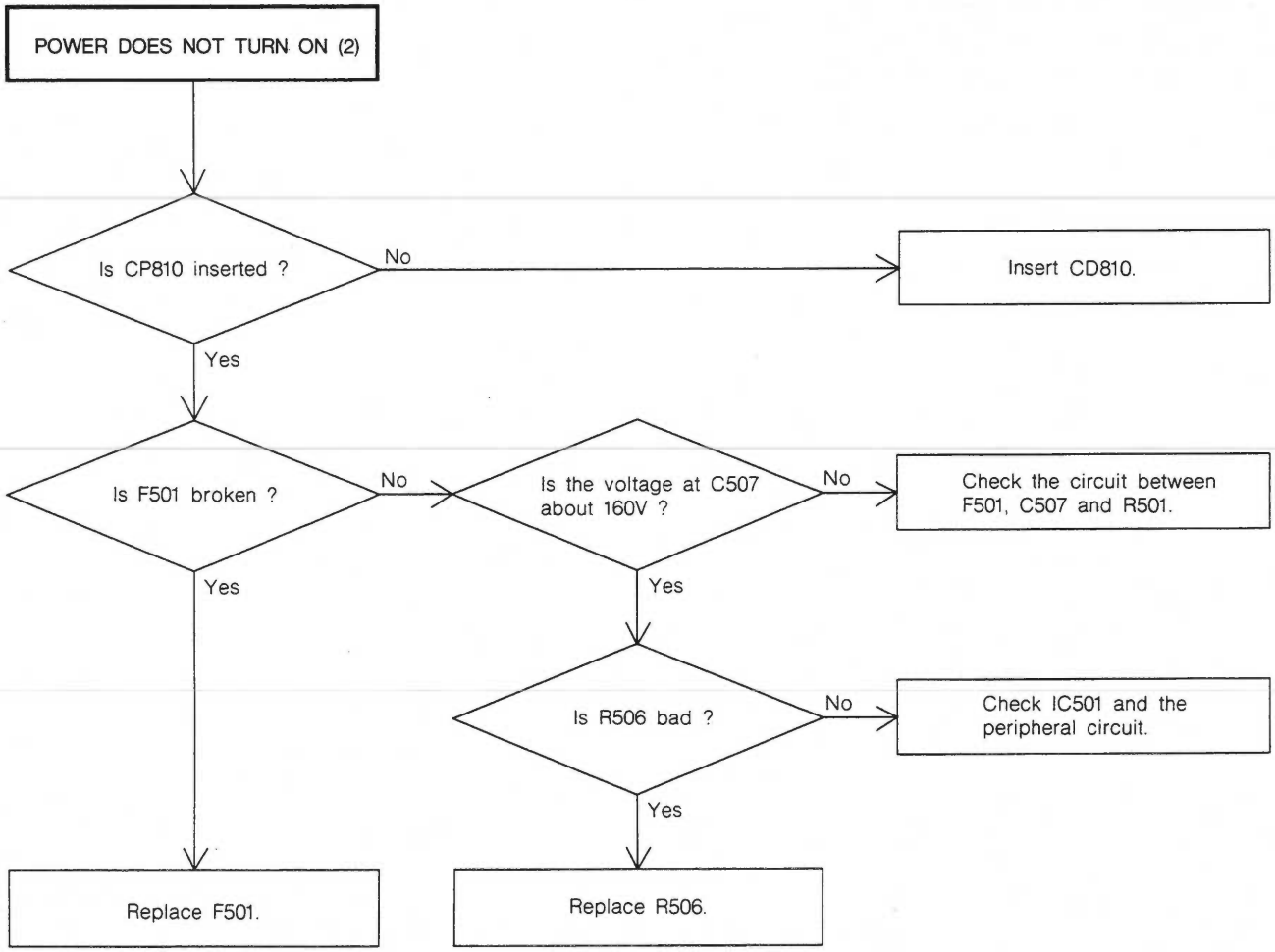
CRT

TROUBLESHOOTING GUIDE

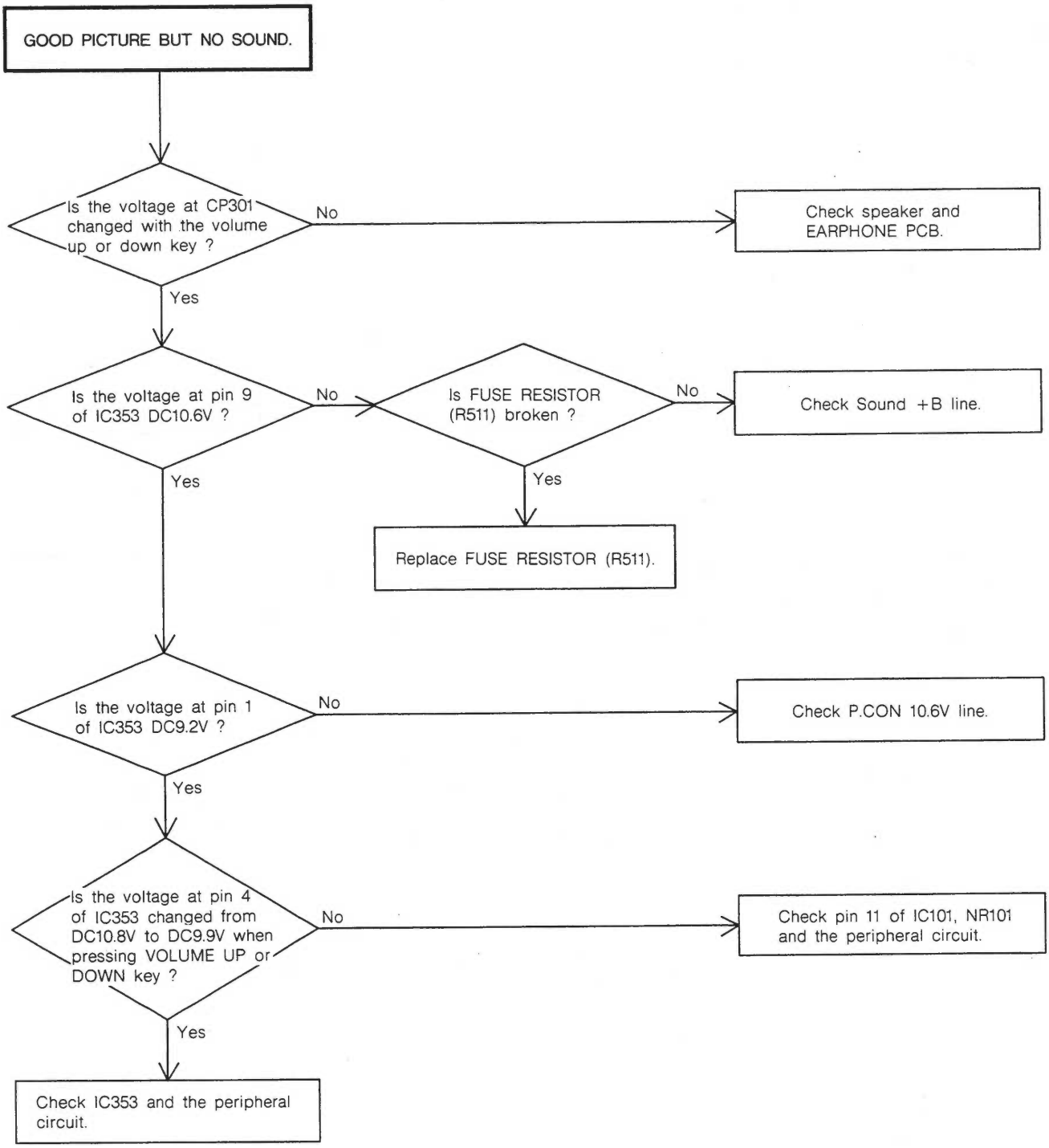
(TV SECTION)


POWER DOES NOT TURN ON (1)
When turning on the Power Switch, does the LED light ?
No
Check P.CON 5V line.
Yes
Is the voltage at pin 1 of IC503 DC14V ?
No
Check ICP503 and D513.
Yes
Is the voltage at pin 3 of IC502 DC5.6V ?
No
Check ICP502.
Yes
Does RY501 work ?
No
Does the BASE voltage of Q501 turn ON or OFF ?
No
Check pins 41 and 42 of IC101 and peripheral circuit.
Yes
Check ICP501, Q503 and the peripheral circuit.
Yes
Check Q504, RY501 and the peripheral circuit.

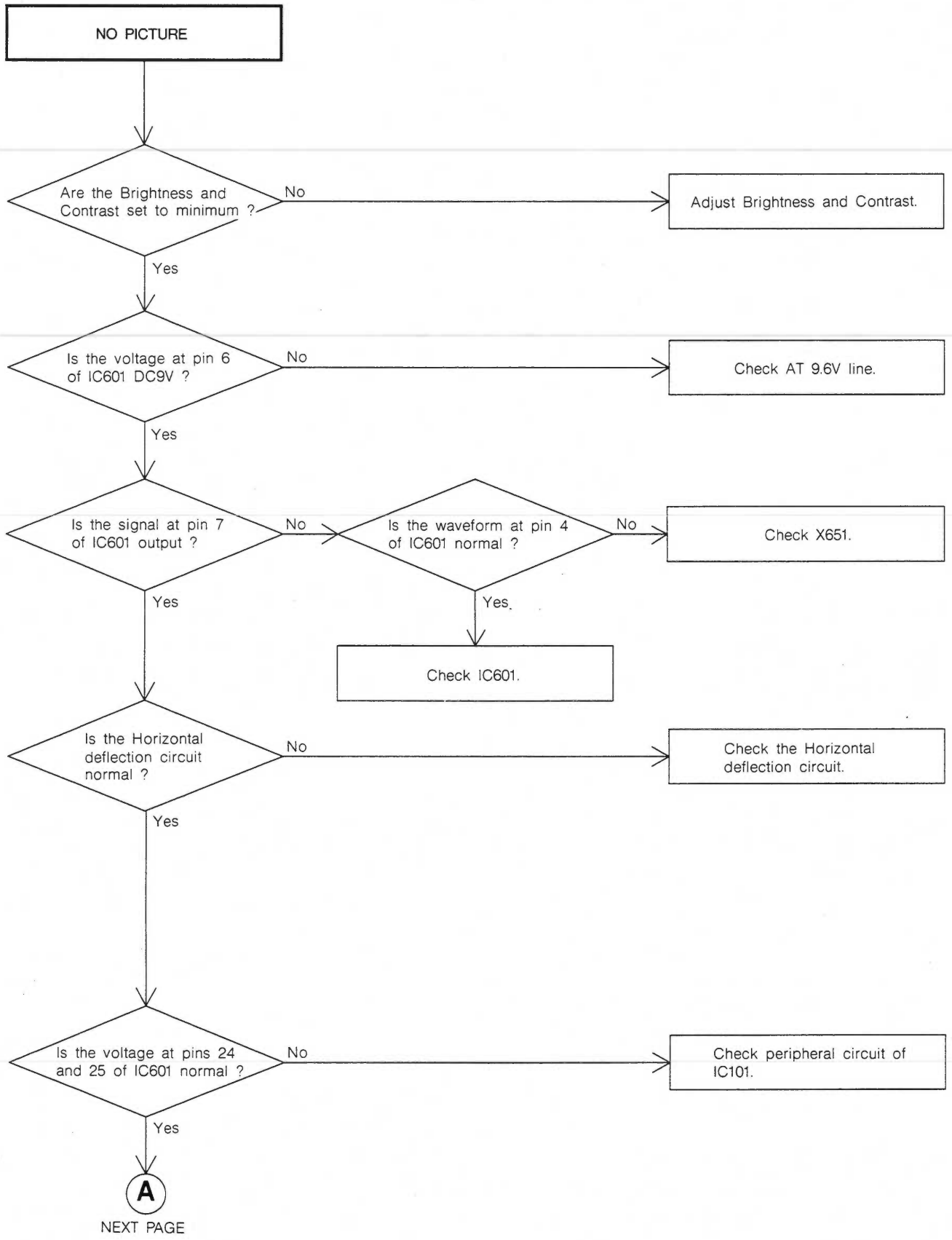
TROUBLESHOOTING GUIDE



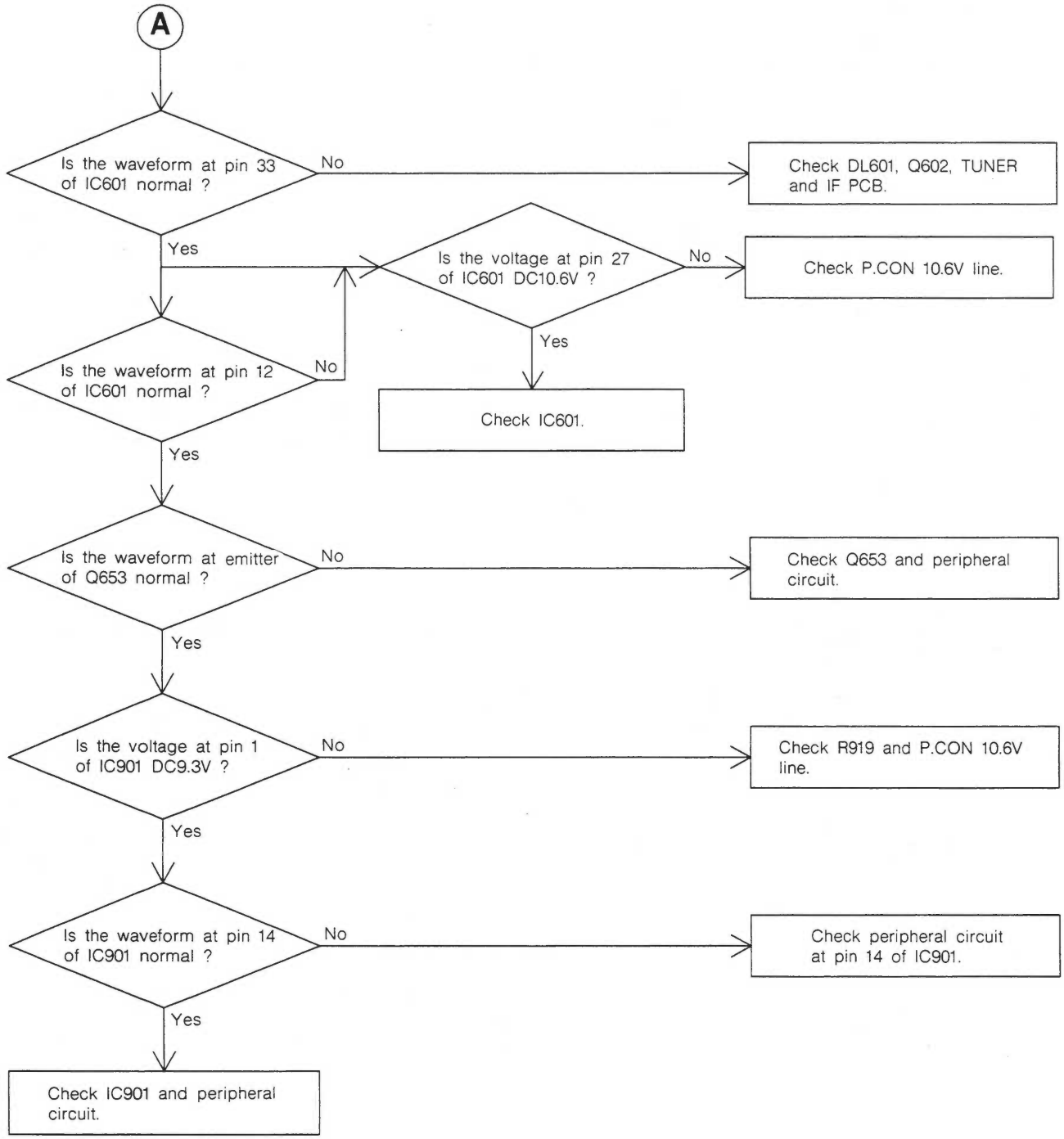
TROUBLESHOOTING GUIDE


GOOD PICTURE BUT NO SOUND.
Is the voltage at CP301 changed with the volume up or down key ?
No
Check speaker and EARPHONE PCB.
Yes
Is the voltage at pin 9 of IC353 DC10.6V ?
No
Is FUSE RESISTOR (R511) broken ?
No
Check Sound +B line.
Yes
Yes
Replace FUSE RESISTOR (R511).
Is the voltage at pin 1 of IC353 DC9.2V ?
No
Check P.CON 10.6V line.
Yes
Is the voltage at pin 4 of IC353 changed from DC10.8V to DC9.9V when pressing VOLUME UP or DOWN key ?
No
Check pin 11 of IC101, NR101 and the peripheral circuit.
Yes
Check IC353 and the peripheral circuit.

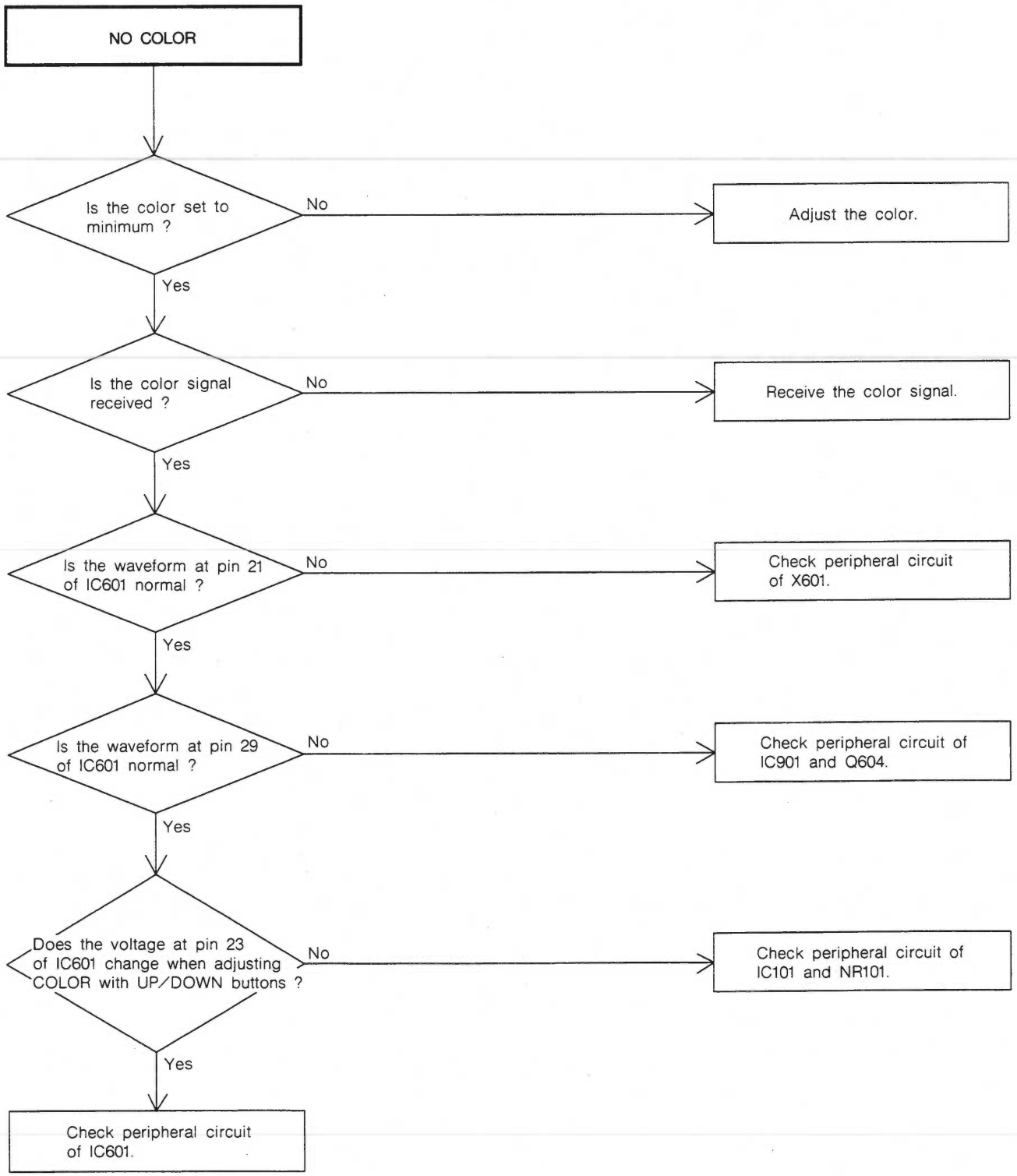
TROUBLESHOOTING GUIDE



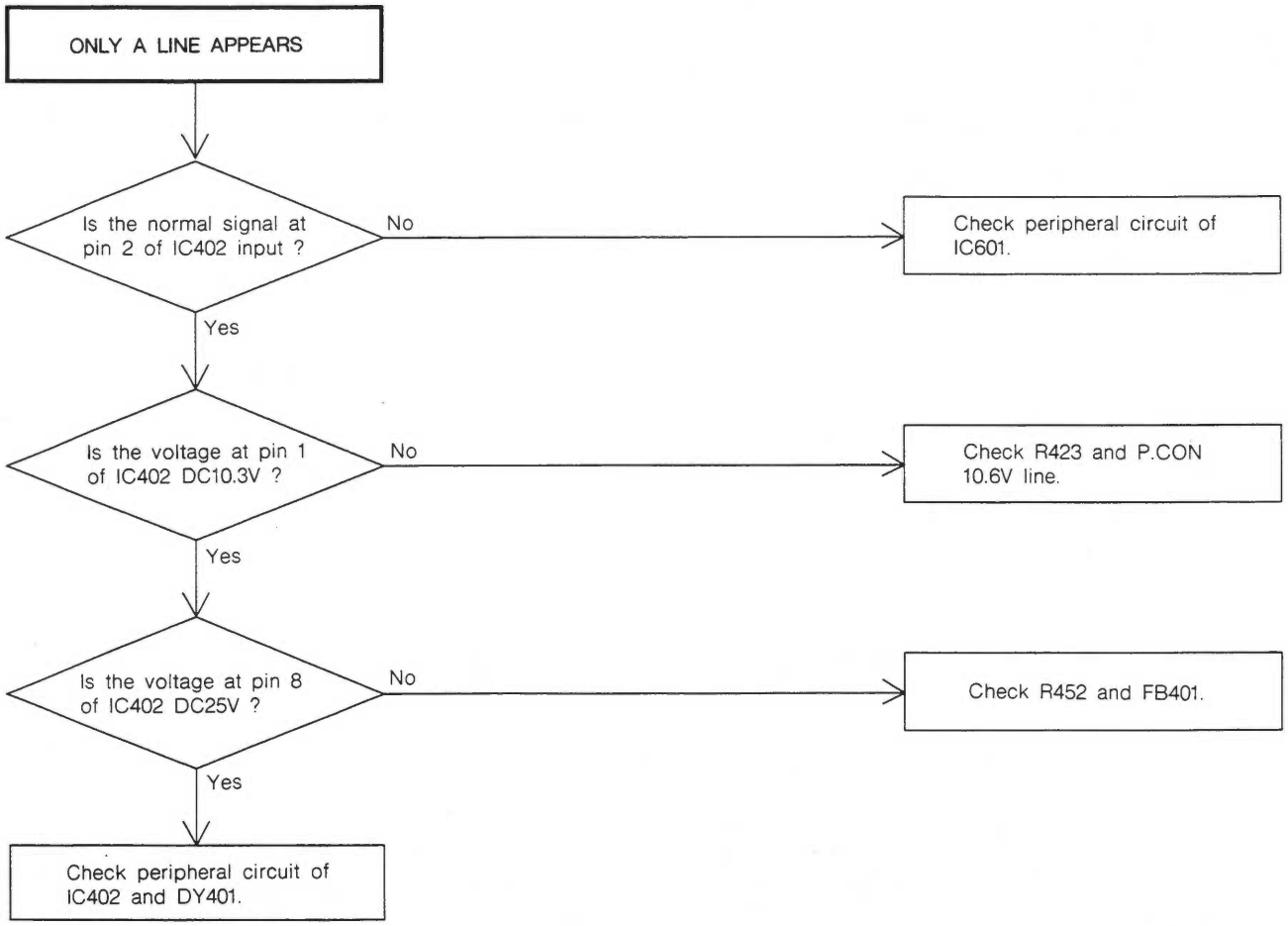
TROUBLESHOOTING GUIDE

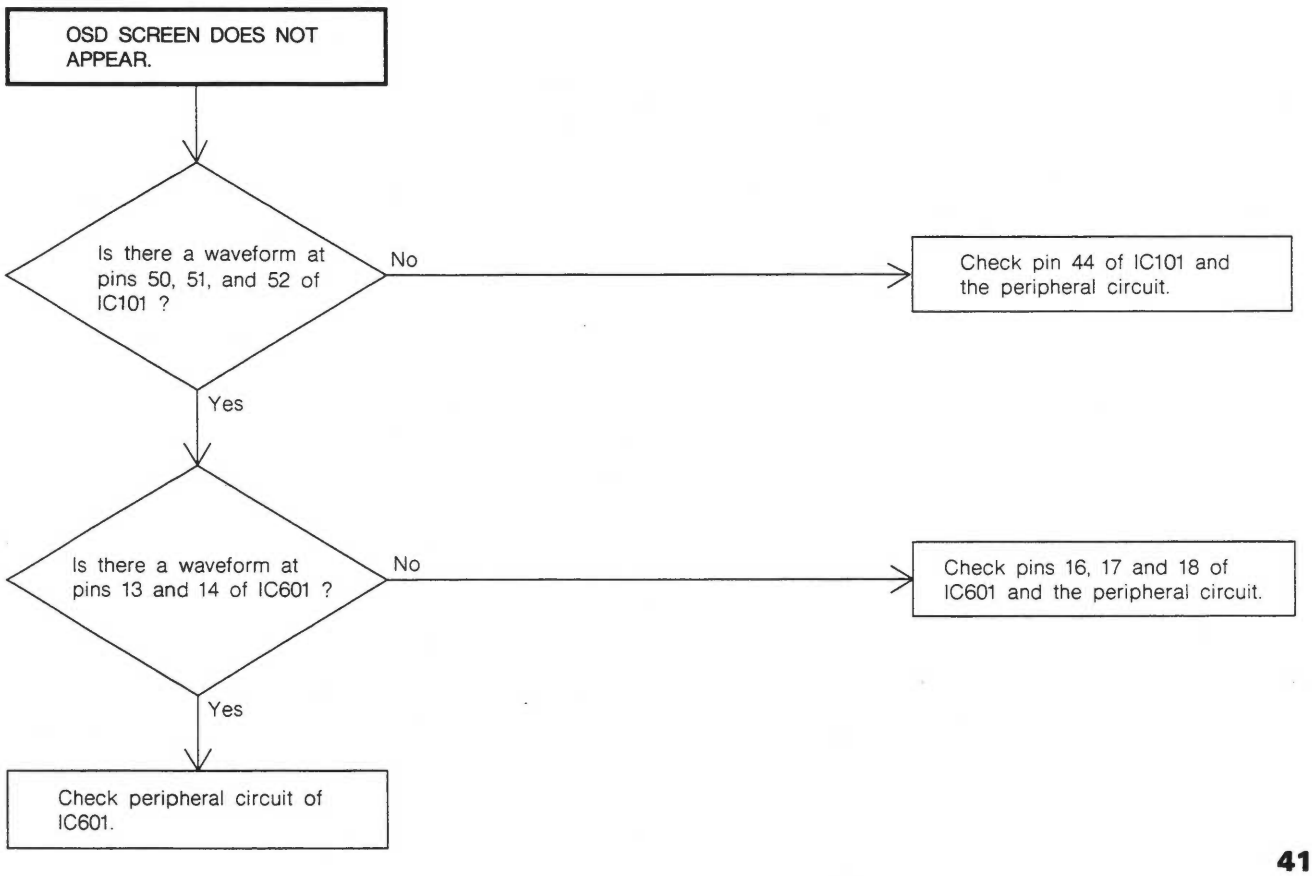

A
Is the waveform at pin 33 of IC601 normal ?
No
Check DL601, Q602, TUNER and IF PCB.
Yes
Is the voltage at pin 27 of IC601 DC10.6V ?
No
Check P.CON 10.6V line.
Yes
Check IC601.
Is the waveform at pin 12 of IC601 normal ?
No
Yes
Is the waveform at emitter of Q653 normal ?
No
Check Q653 and peripheral circuit.
Yes
Is the voltage at pin 1 of IC901 DC9.3V ?
No
Check R919 and P.CON 10.6V line.
Yes
Is the waveform at pin 14 of IC901 normal ?
No
Check peripheral circuit at pin 14 of IC901.
Yes
Check IC901 and peripheral circuit.

TROUBLESHOOTING GUIDE


NO COLOR
Is the color set to minimum ?
No
Adjust the color.
Yes
Is the color signal received ?
No
Receive the color signal.
Yes
Is the waveform at pin 21 of IC601 normal ?
No
Check peripheral circuit of X601.
Yes
Is the waveform at pin 29 of IC601 normal ?
No
Check peripheral circuit of IC901 and Q604.
Yes
Does the voltage at pin 23 of IC601 change when adjusting COLOR with UP/DOWN buttons ?
No
Check peripheral circuit of IC101 and NR101.
Yes
Check peripheral circuit of IC601.

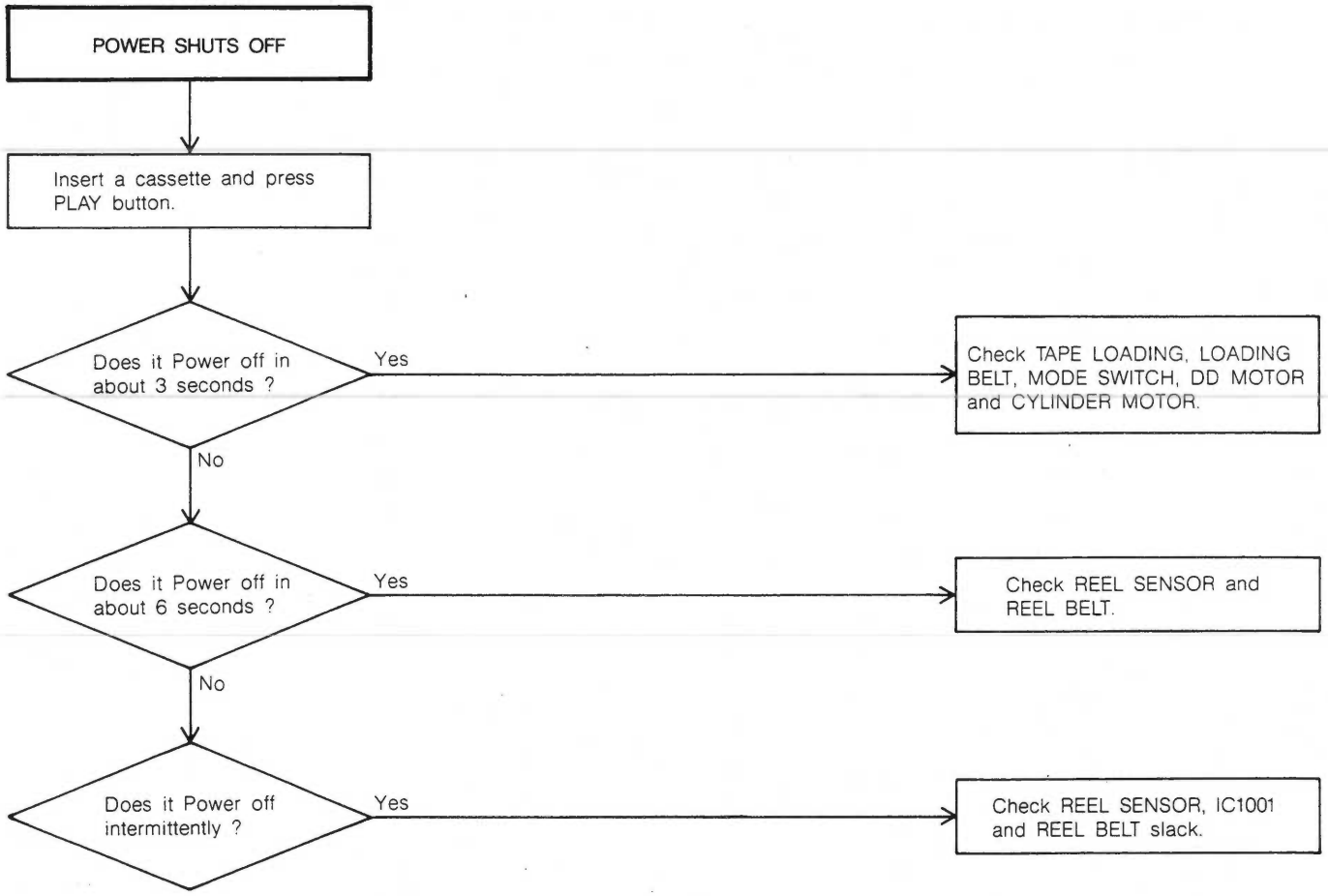
TROUBLESHOOTING GUIDE


ONLY A LINE APPEARS
Is the normal signal at pin 2 of IC402 input ?
No
Check peripheral circuit of IC601.
Yes
Is the voltage at pin 1 of IC402 DC10.3V ?
No
Check R423 and P.CON 10.6V line.
Yes
Is the voltage at pin 8 of IC402 DC25V ?
No
Check R452 and FB401.
Yes
Check peripheral circuit of IC402 and DY401.

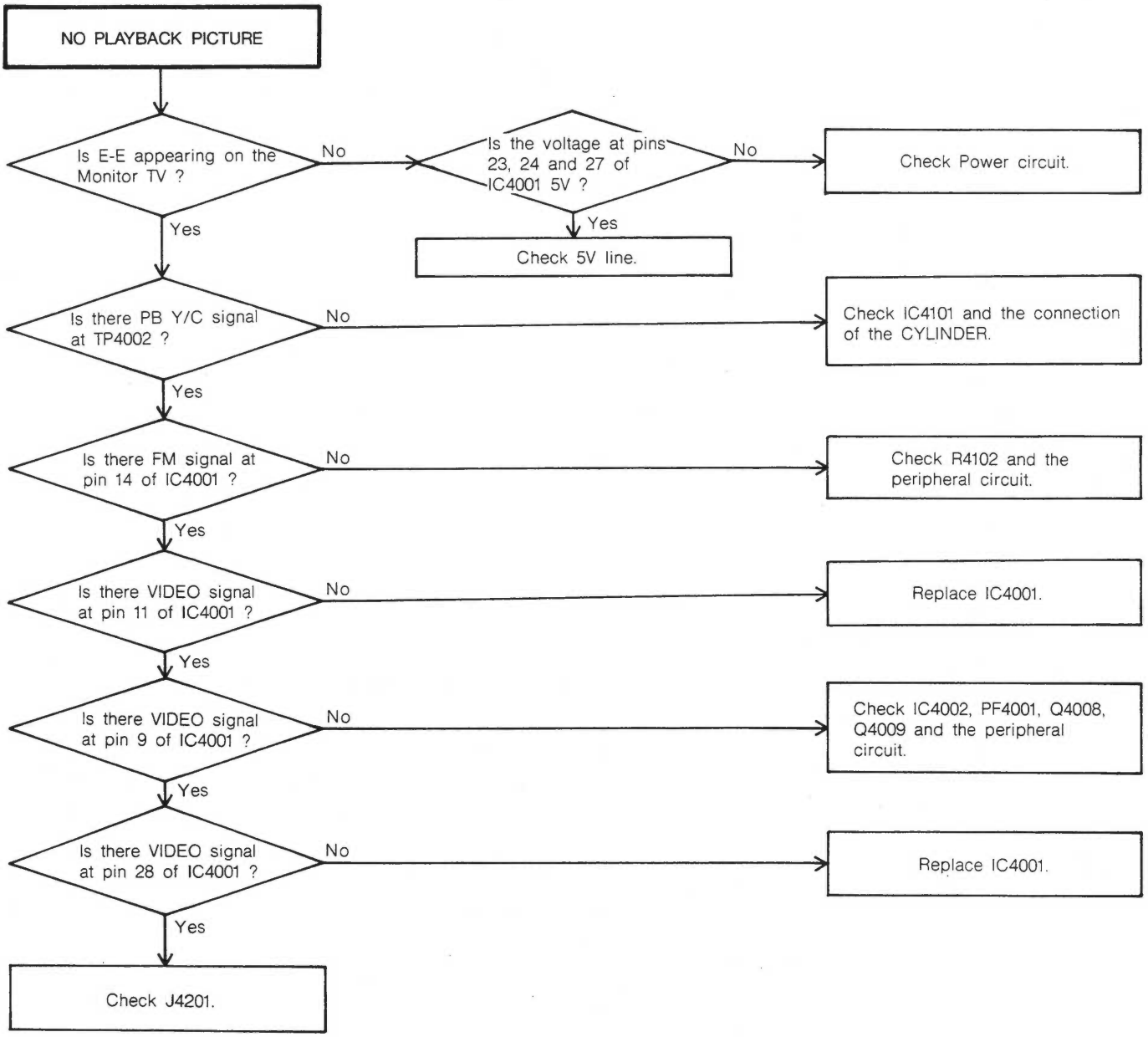

OSD SCREEN DOES NOT APPEAR.
Is there a waveform at pins 50, 51, and 52 of IC101 ?
No
Check pin 44 of IC101 and the peripheral circuit.
Yes
Is there a waveform at pins 13 and 14 of IC601 ?
No
Check pins 16, 17 and 18 of IC601 and the peripheral circuit.
Yes
Check peripheral circuit of IC601.

TROUBLESHOOTING GUIDE

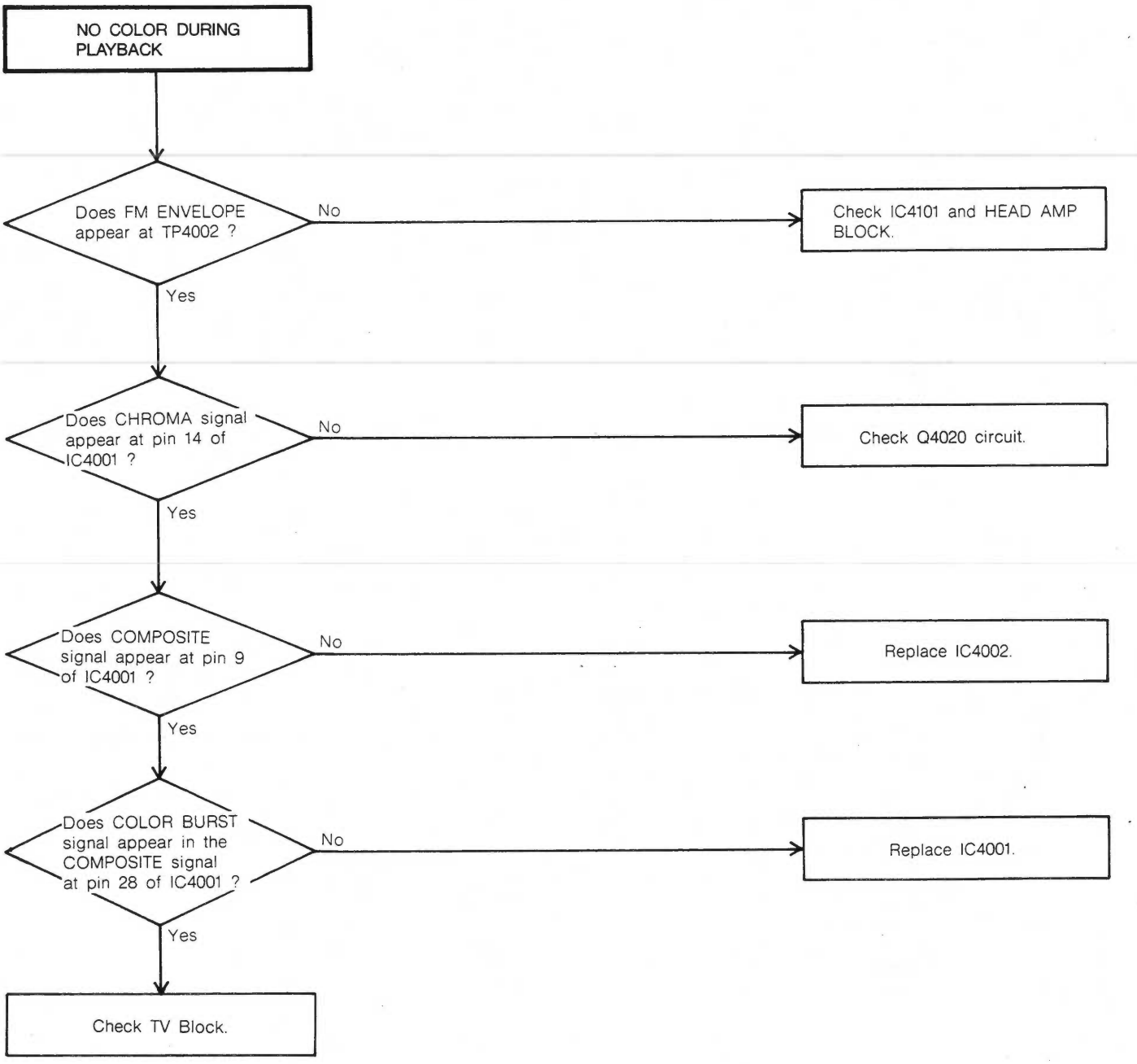
(VCR SECTION)


POWER SHUTS OFF
Insert a cassette and press PLAY button.
Does it Power off in about 3 seconds ?
Yes
Check TAPE LOADING, LOADING BELT, MODE SWITCH, DD MOTOR and CYLINDER MOTOR.
No
Does it Power off in about 6 seconds ?
Yes
Check REEL SENSOR and REEL BELT.
No
Does it Power off intermittently ?
Yes
Check REEL SENSOR, IC1001 and REEL BELT slack.

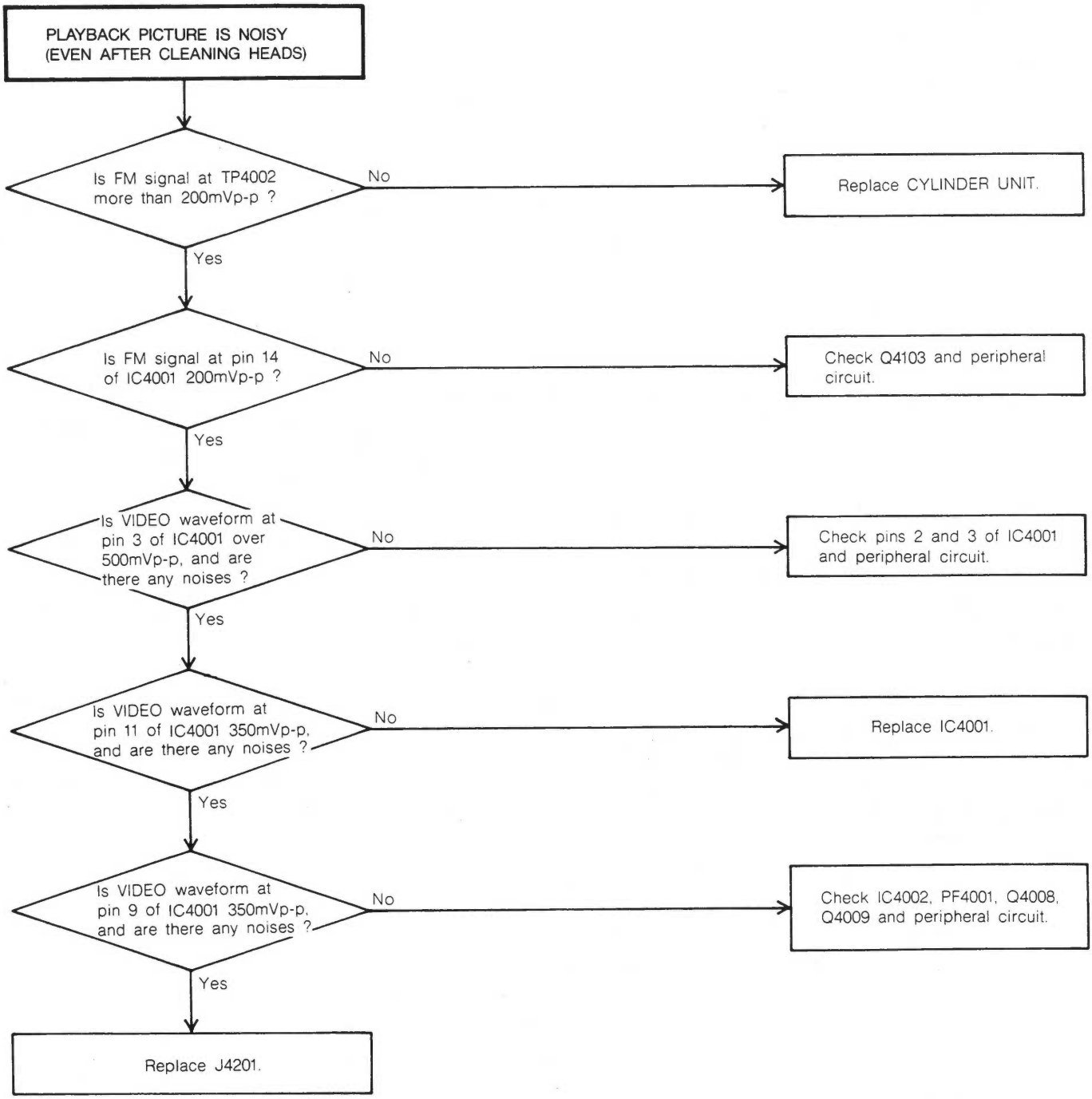
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE
Is E-E appearing on the Monitor TV ?
No
Is the voltage at pins 23, 24 and 27 of IC4001 5V ?
No
Check Power circuit.
Yes
Check 5V line.
Yes
Is there PB Y/C signal at TP4002 ?
No
Check IC4101 and the connection of the CYLINDER.
Yes
Is there FM signal at pin 14 of IC4001 ?
No
Check R4102 and the peripheral circuit.
Yes
Is there VIDEO signal at pin 11 of IC4001 ?
No
Replace IC4001.
Yes
Is there VIDEO signal at pin 9 of IC4001 ?
No
Check IC4002, PF4001, Q4008, Q4009 and the peripheral circuit.
Yes
Is there VIDEO signal at pin 28 of IC4001 ?
No
Replace IC4001.
Yes
Check J4201.

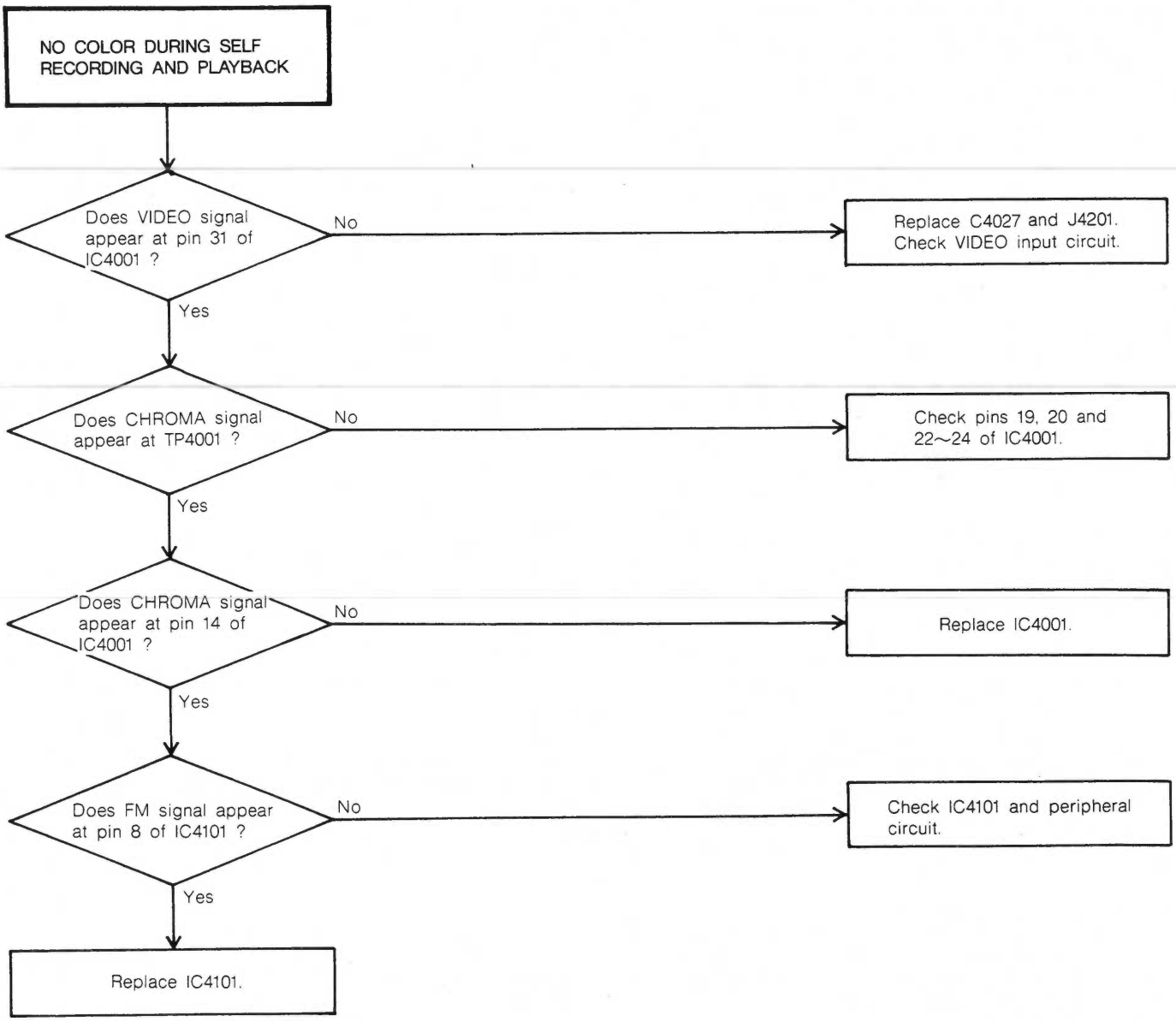
TROUBLESHOOTING GUIDE



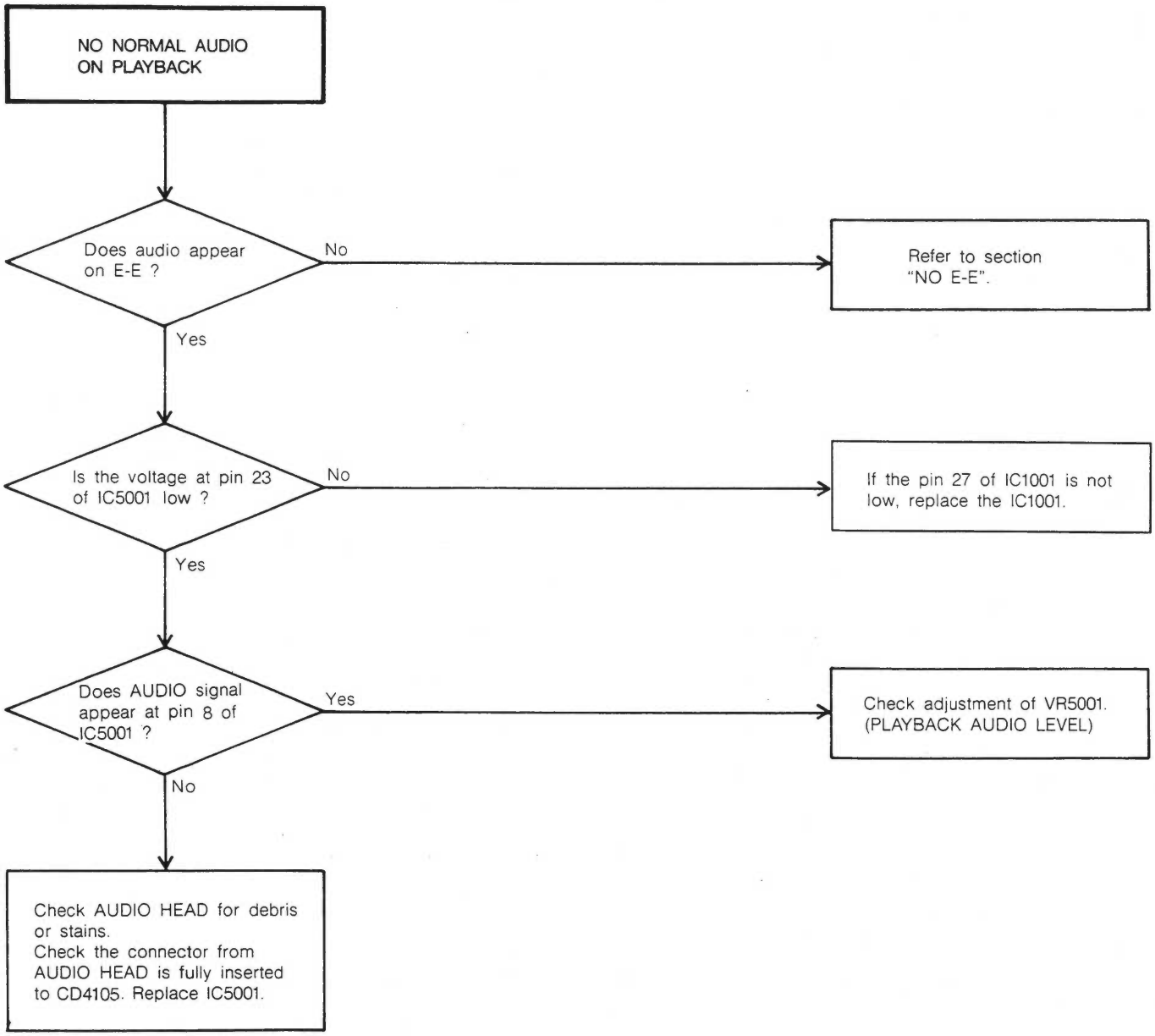
TROUBLESHOOTING GUIDE


PLAYBACK PICTURE IS NOISY
(EVEN AFTER CLEANING HEADS)
Is FM signal at TP4002 more than 200mVp-p ?
No
Replace CYLINDER UNIT.
Yes
Is FM signal at pin 14 of IC4001 200mVp-p ?
No
Check Q4103 and peripheral circuit.
Yes
Is VIDEO waveform at pin 3 of IC4001 over 500mVp-p, and are there any noises ?
No
Check pins 2 and 3 of IC4001 and peripheral circuit.
Yes
Is VIDEO waveform at pin 11 of IC4001 350mVp-p, and are there any noises ?
No
Replace IC4001.
Yes
Is VIDEO waveform at pin 9 of IC4001 350mVp-p, and are there any noises ?
No
Check IC4002, PF4001, Q4008, Q4009 and peripheral circuit.
Yes
Replace J4201.

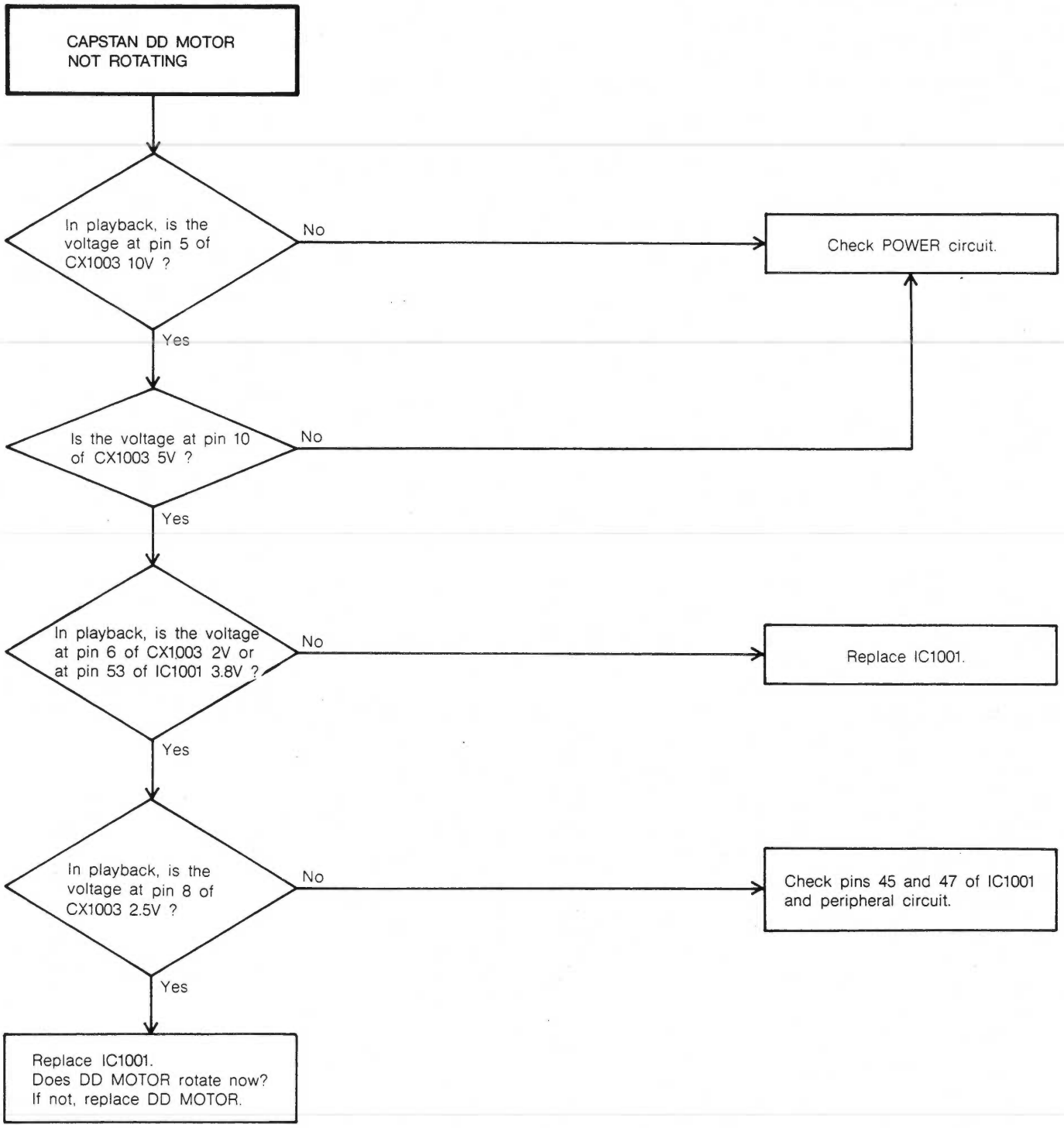
TROUBLESHOOTING GUIDE


NO COLOR DURING SELF RECORDING AND PLAYBACK
Does VIDEO signal appear at pin 31 of IC4001 ?
No
Replace C4027 and J4201. Check VIDEO input circuit.
Yes
Does CHROMA signal appear at TP4001 ?
No
Check pins 19, 20 and 22~24 of IC4001.
Yes
Does CHROMA signal appear at pin 14 of IC4001 ?
No
Replace IC4001.
Yes
Does FM signal appear at pin 8 of IC4101 ?
No
Check IC4101 and peripheral circuit.
Yes
Replace IC4101.

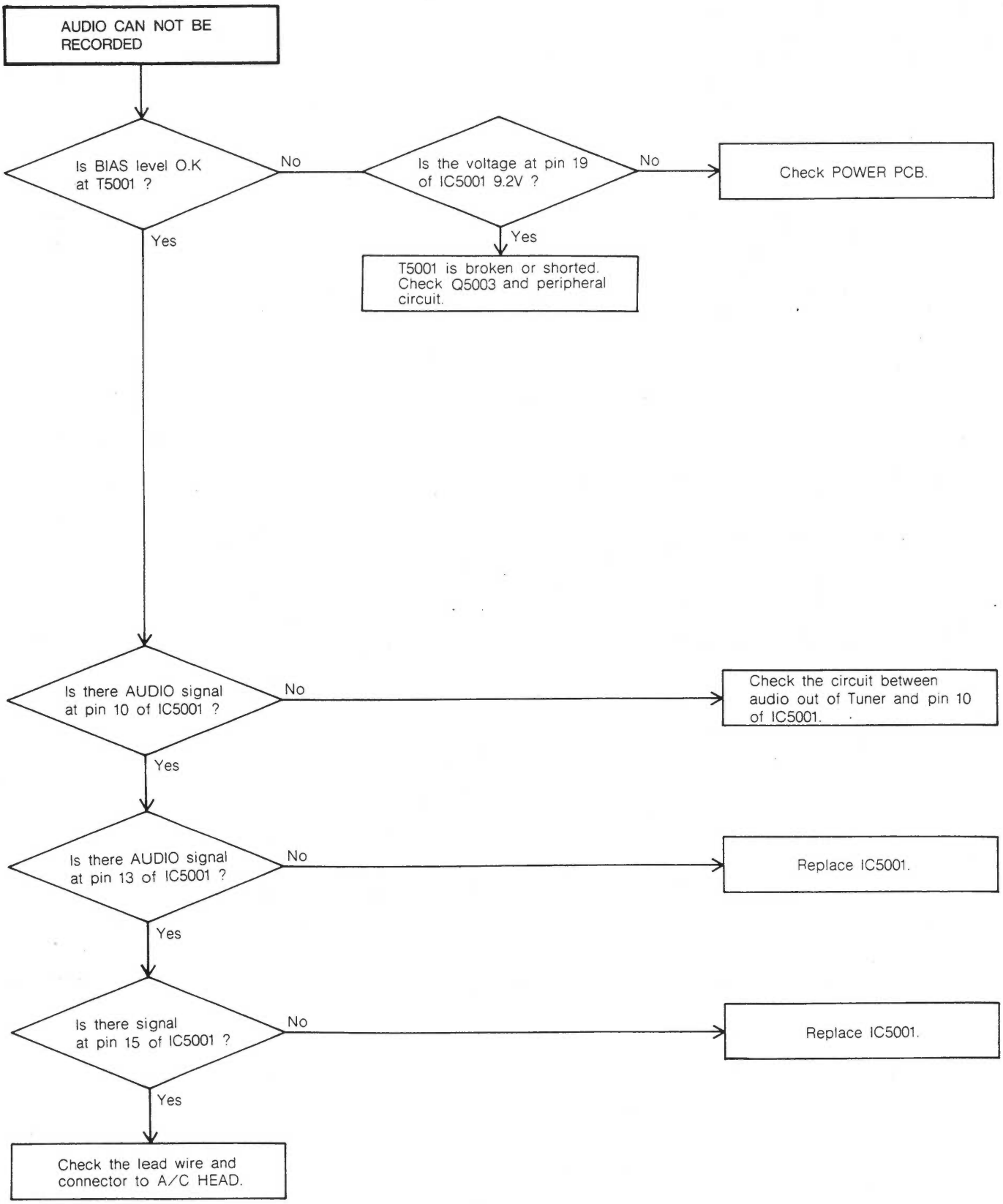
TROUBLESHOOTING GUIDE


NO NORMAL AUDIO ON PLAYBACK
Does audio appear on E-E ?
No
Refer to section "NO E-E".
Yes
Is the voltage at pin 23 of IC5001 low ?
No
If the pin 27 of IC1001 is not low, replace the IC1001.
Yes
Does AUDIO signal appear at pin 8 of IC5001 ?
Yes
Check adjustment of VR5001. (PLAYBACK AUDIO LEVEL)
No
Check AUDIO HEAD for debris or stains.
Check the connector from AUDIO HEAD is fully inserted to CD4105. Replace IC5001.

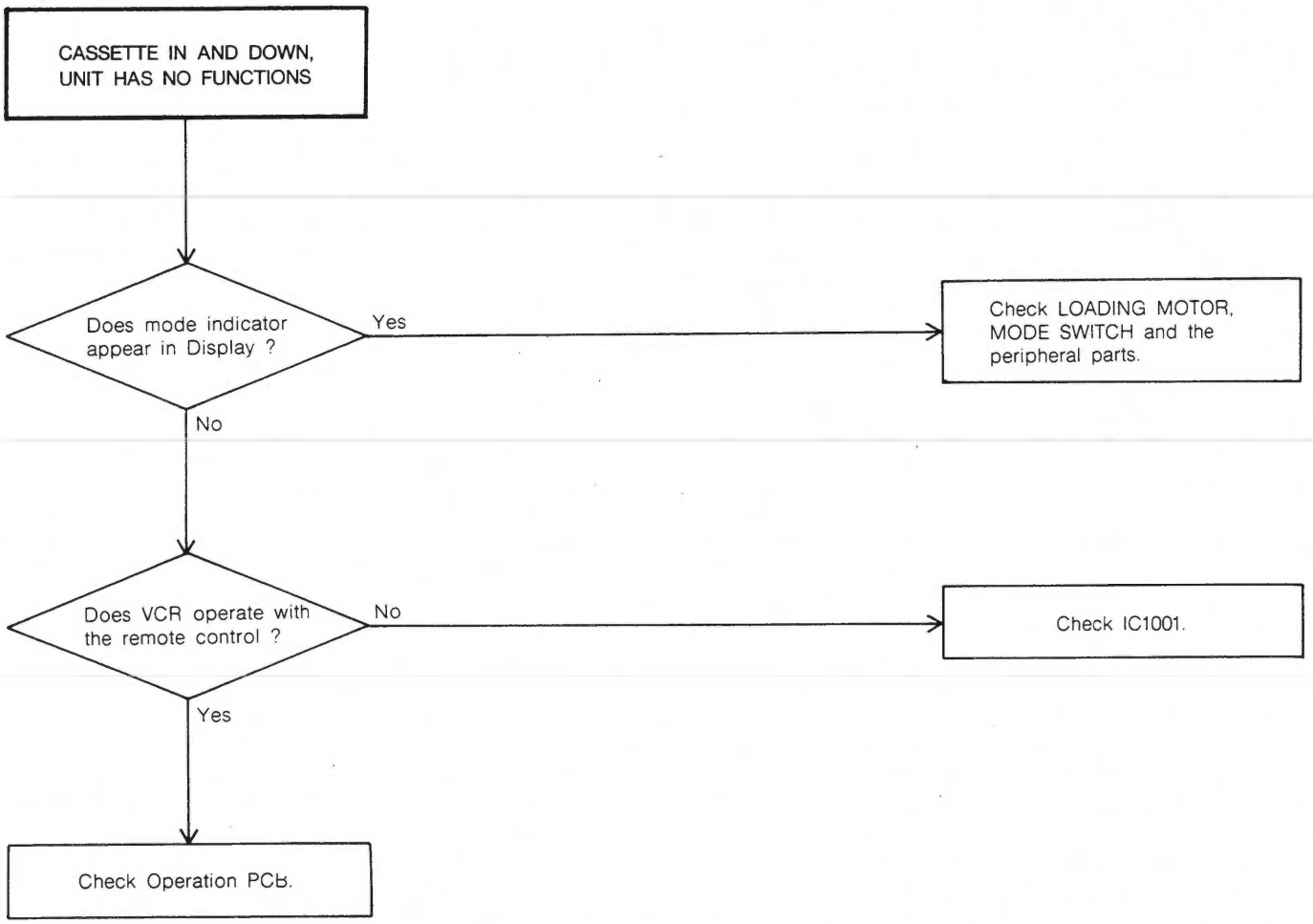
TROUBLESHOOTING GUIDE


CAPSTAN DD MOTOR NOT ROTATING
In playback, is the voltage at pin 5 of CX1003 10V ?
No
Check POWER circuit.
Yes
Is the voltage at pin 10 of CX1003 5V ?
No
Yes
In playback, is the voltage at pin 6 of CX1003 2V or at pin 53 of IC1001 3.8V ?
No
Replace IC1001.
Yes
In playback, is the voltage at pin 8 of CX1003 2.5V ?
No
Check pins 45 and 47 of IC1001 and peripheral circuit.
Yes
Replace IC1001.
Does DD MOTOR rotate now?
If not, replace DD MOTOR.

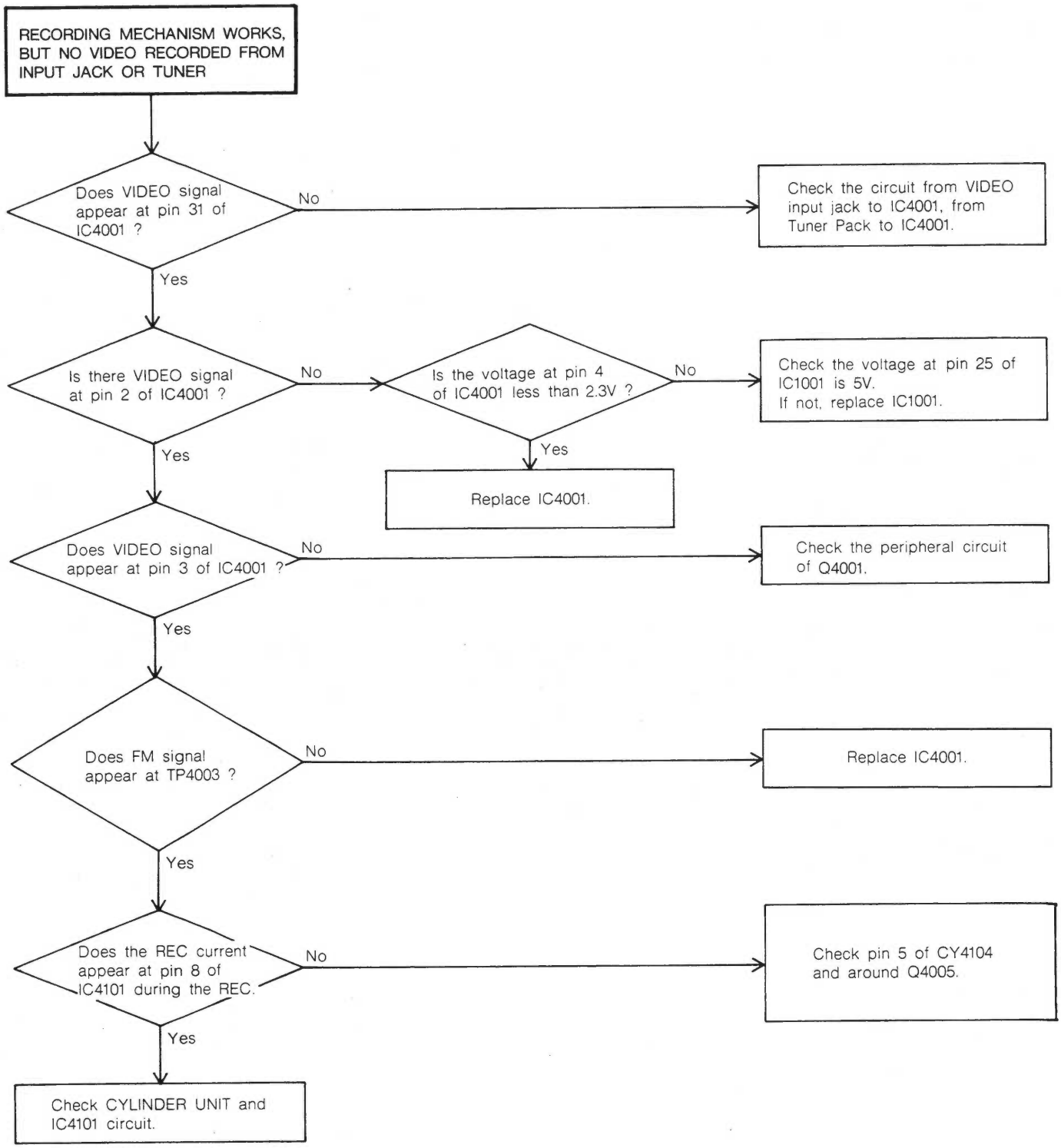
TROUBLESHOOTING GUIDE


AUDIO CAN NOT BE RECORDED
Is BIAS level O.K at T5001 ?
No
Is the voltage at pin 19 of IC5001 9.2V ?
No
Check POWER PCB.
Yes
Yes
T5001 is broken or shorted. Check Q5003 and peripheral circuit.
Is there AUDIO signal at pin 10 of IC5001 ?
No
Check the circuit between audio out of Tuner and pin 10 of IC5001.
Yes
Is there AUDIO signal at pin 13 of IC5001 ?
No
Replace IC5001.
Yes
Is there signal at pin 15 of IC5001 ?
No
Replace IC5001.
Yes
Check the lead wire and connector to A/C HEAD.

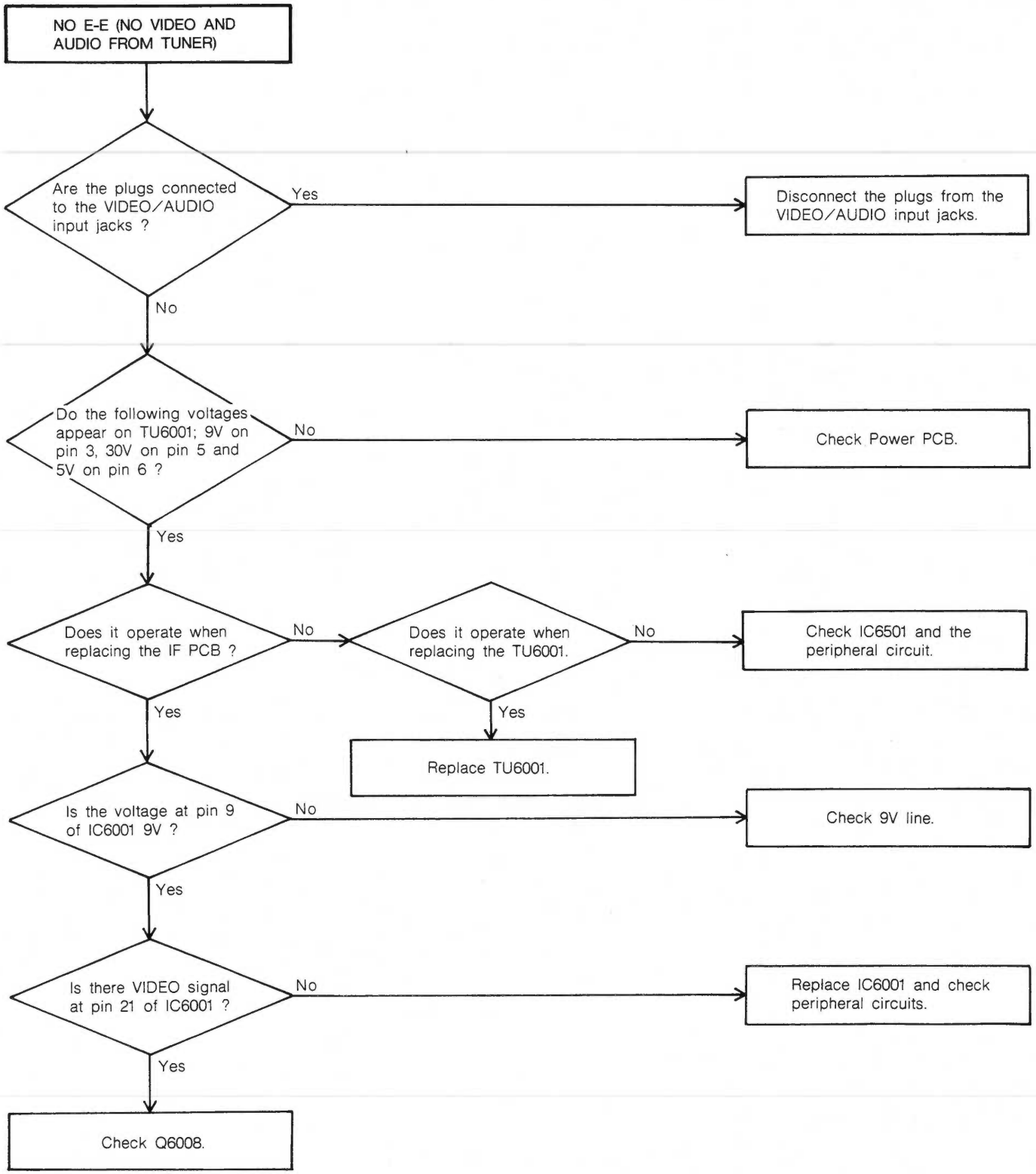
TROUBLESHOOTING GUIDE



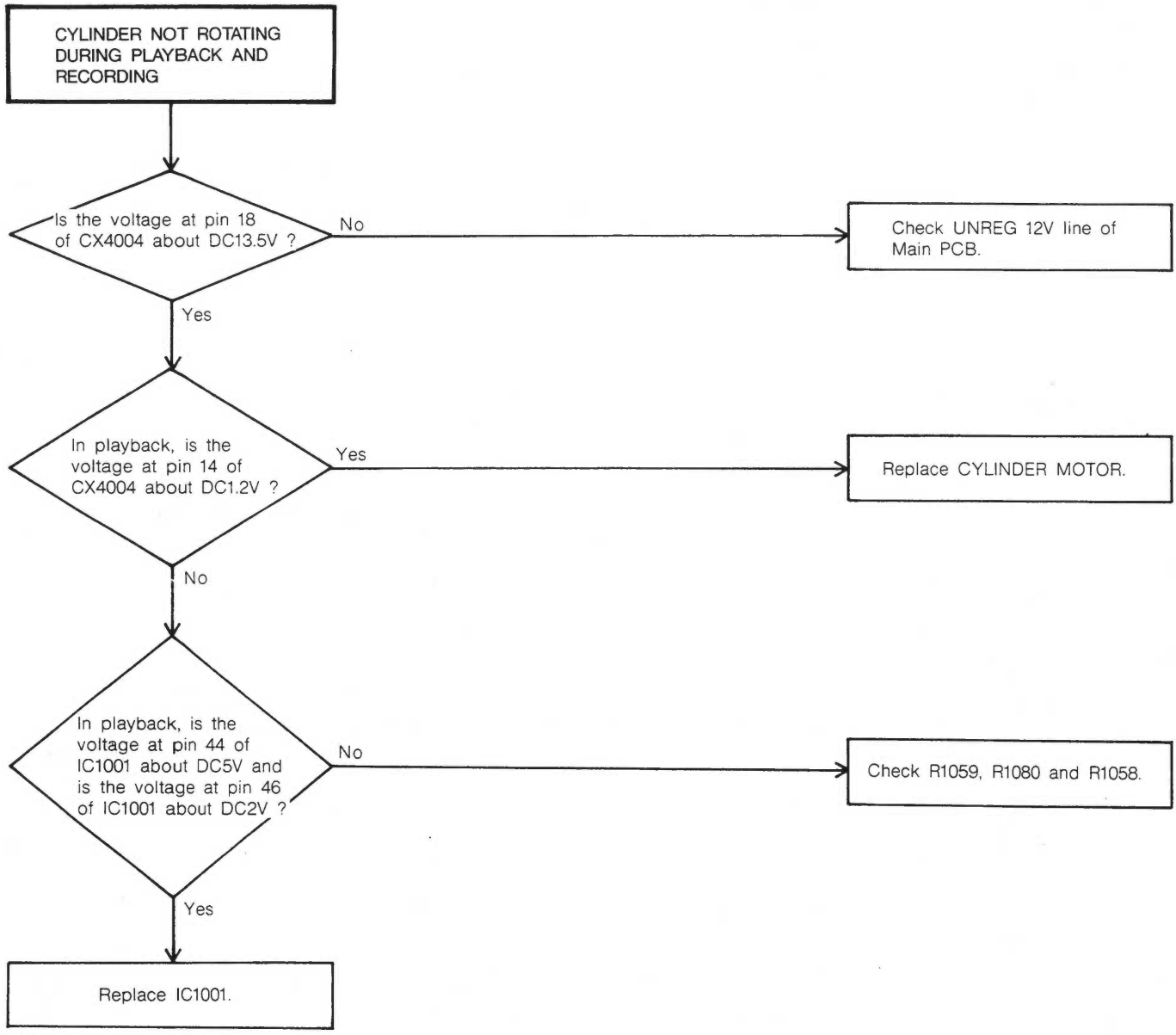
TROUBLESHOOTING GUIDE


RECORDING MECHANISM WORKS, BUT NO VIDEO RECORDED FROM INPUT JACK OR TUNER
Does VIDEO signal appear at pin 31 of IC4001 ?
No
Check the circuit from VIDEO input jack to IC4001, from Tuner Pack to IC4001.
Yes
Is there VIDEO signal at pin 2 of IC4001 ?
No
Is the voltage at pin 4 of IC4001 less than 2.3V ?
No
Check the voltage at pin 25 of IC1001 is 5V. If not, replace IC1001.
Yes
Yes
Replace IC4001.
Does VIDEO signal appear at pin 3 of IC4001 ?
No
Check the peripheral circuit of Q4001.
Yes
Does FM signal appear at TP4003 ?
No
Replace IC4001.
Yes
Does the REC current appear at pin 8 of IC4101 during the REC.
No
Check pin 5 of CY4104 and around Q4005.
Yes
Check CYLINDER UNIT and IC4101 circuit.

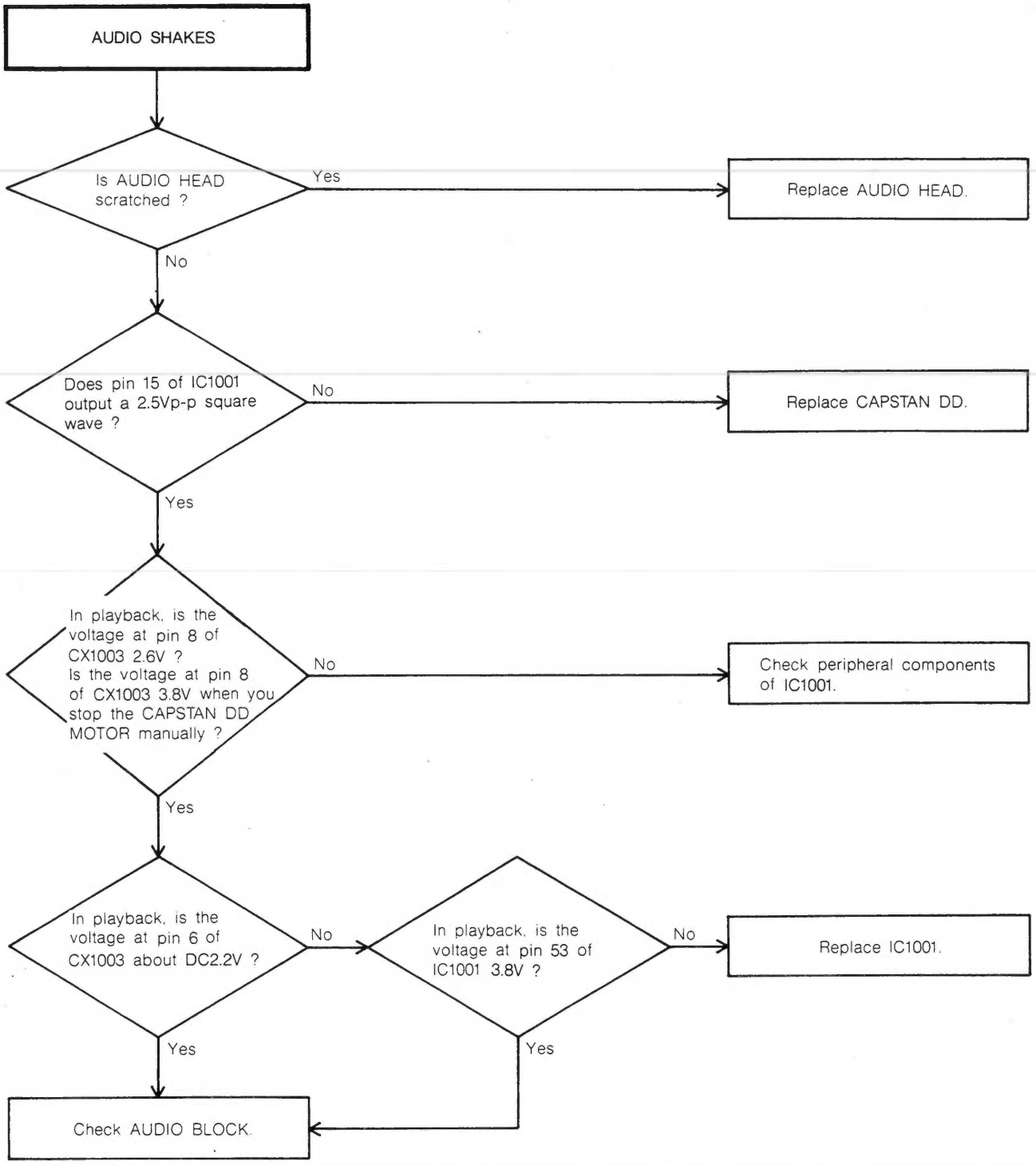
TROUBLESHOOTING GUIDE


NO E-E (NO VIDEO AND AUDIO FROM TUNER)
Are the plugs connected to the VIDEO/AUDIO input jacks ?
Yes
Disconnect the plugs from the VIDEO/AUDIO input jacks.
No
Do the following voltages appear on TU6001; 9V on pin 3, 30V on pin 5 and 5V on pin 6 ?
No
Check Power PCB.
Yes
Does it operate when replacing the IF PCB ?
No
Does it operate when replacing the TU6001.
No
Check IC6501 and the peripheral circuit.
Yes
Yes
Replace TU6001.
Is the voltage at pin 9 of IC6001 9V ?
No
Check 9V line.
Yes
Is there VIDEO signal at pin 21 of IC6001 ?
No
Replace IC6001 and check peripheral circuits.
Yes
Check Q6008.

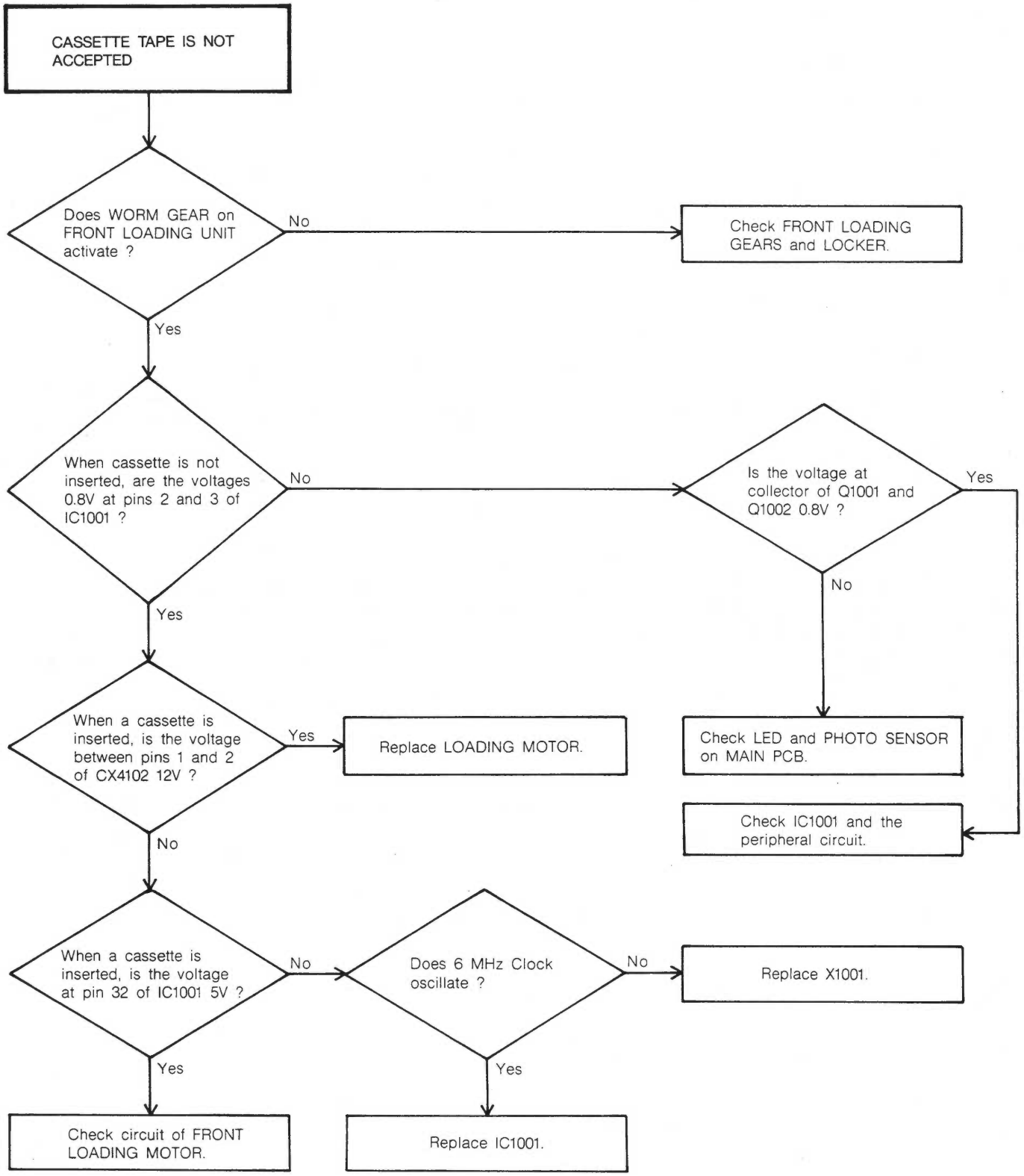
TROUBLESHOOTING GUIDE


CYLINDER NOT ROTATING DURING PLAYBACK AND RECORDING
Is the voltage at pin 18 of CX4004 about DC13.5V ?
No
Check UNREG 12V line of Main PCB.
Yes
In playback, is the voltage at pin 14 of CX4004 about DC1.2V ?
Yes
Replace CYLINDER MOTOR.
No
In playback, is the voltage at pin 44 of IC1001 about DC5V and is the voltage at pin 46 of IC1001 about DC2V ?
No
Check R1059, R1080 and R1058.
Yes
Replace IC1001.

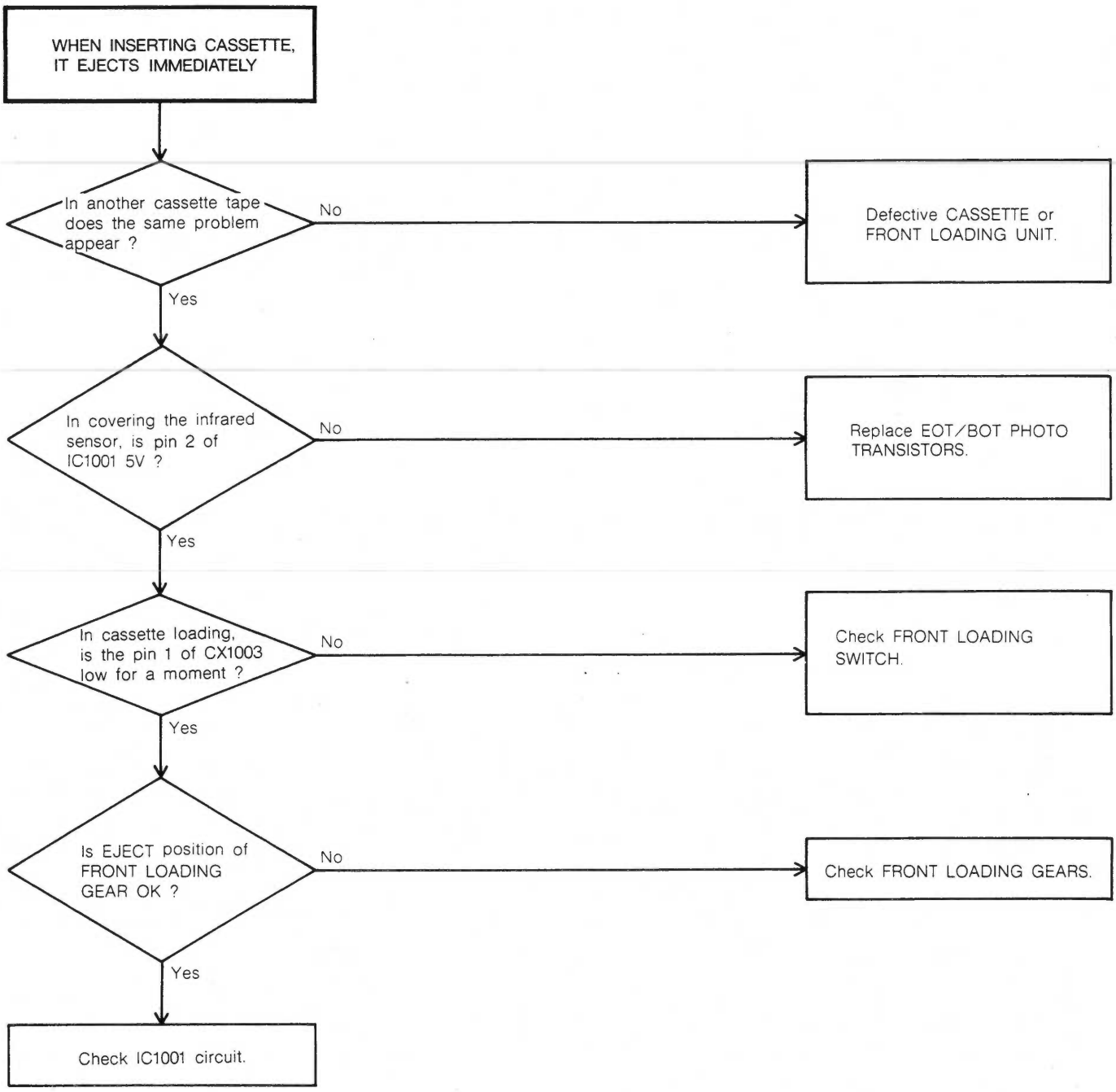
TROUBLESHOOTING GUIDE


AUDIO SHAKES
Is AUDIO HEAD scratched ?
Yes
Replace AUDIO HEAD.
No
Does pin 15 of IC1001 output a 2.5Vp-p square wave ?
No
Replace CAPSTAN DD.
Yes
In playback, is the voltage at pin 8 of CX1003 2.6V ? Is the voltage at pin 8 of CX1003 3.8V when you stop the CAPSTAN DD MOTOR manually ?
No
Check peripheral components of IC1001.
Yes
In playback, is the voltage at pin 6 of CX1003 about DC2.2V ?
No
In playback, is the voltage at pin 53 of IC1001 3.8V ?
No
Replace IC1001.
Yes
Yes
Check AUDIO BLOCK.

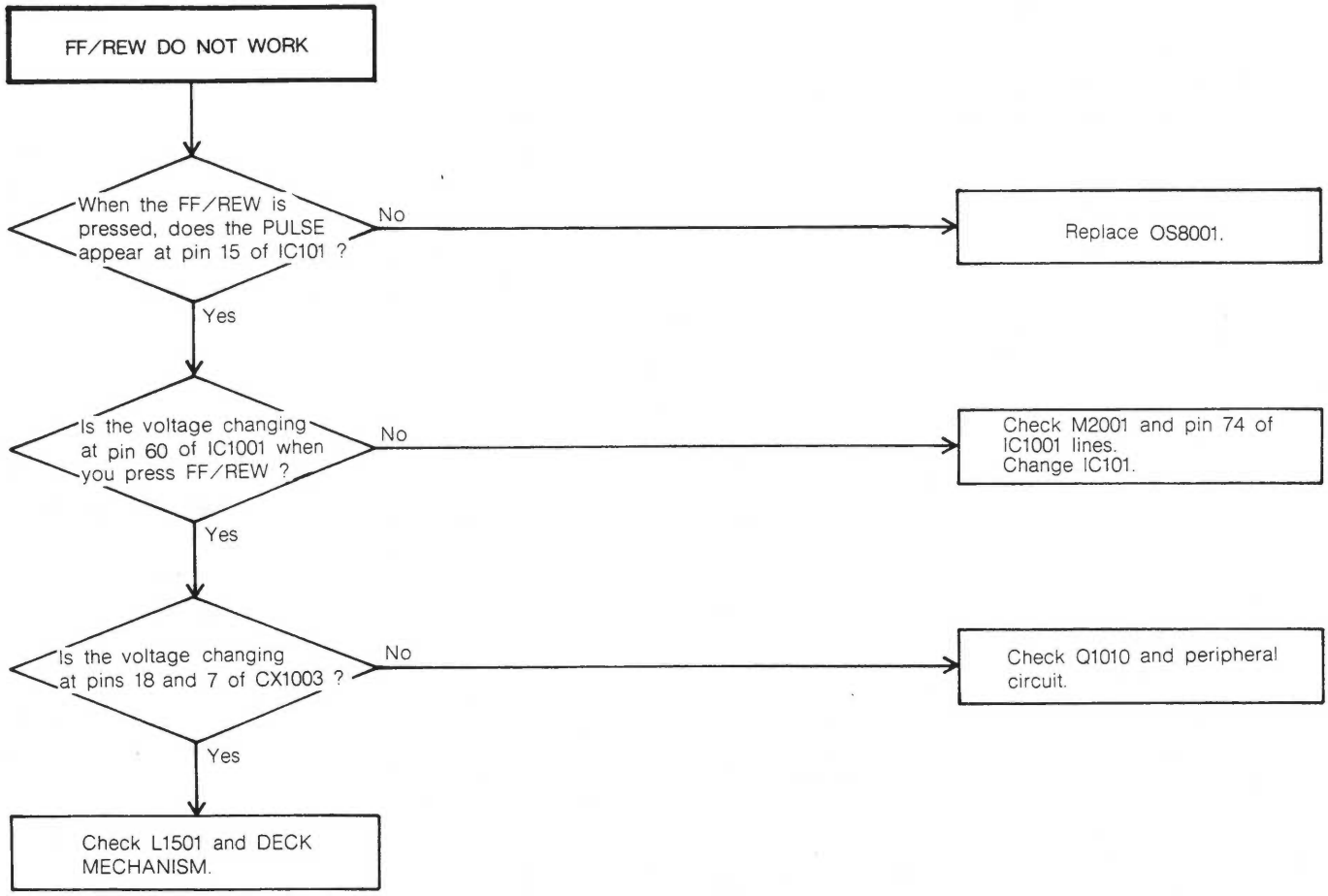
TROUBLESHOOTING GUIDE


CASSETTE TAPE IS NOT ACCEPTED
Does WORM GEAR on FRONT LOADING UNIT activate ?
No
Check FRONT LOADING GEARS and LOCKER.
Yes
When cassette is not inserted, are the voltages 0.8V at pins 2 and 3 of IC1001 ?
No
Is the voltage at collector of Q1001 and Q1002 0.8V ?
Yes
No
Yes
When a cassette is inserted, is the voltage between pins 1 and 2 of CX4102 12V ?
Yes
Replace LOADING MOTOR.
Check LED and PHOTO SENSOR on MAIN PCB.
Check IC1001 and the peripheral circuit.
No
When a cassette is inserted, is the voltage at pin 32 of IC1001 5V ?
No
Does 6 MHz Clock oscillate ?
No
Replace X1001.
Yes
Yes
Check circuit of FRONT LOADING MOTOR.
Replace IC1001.

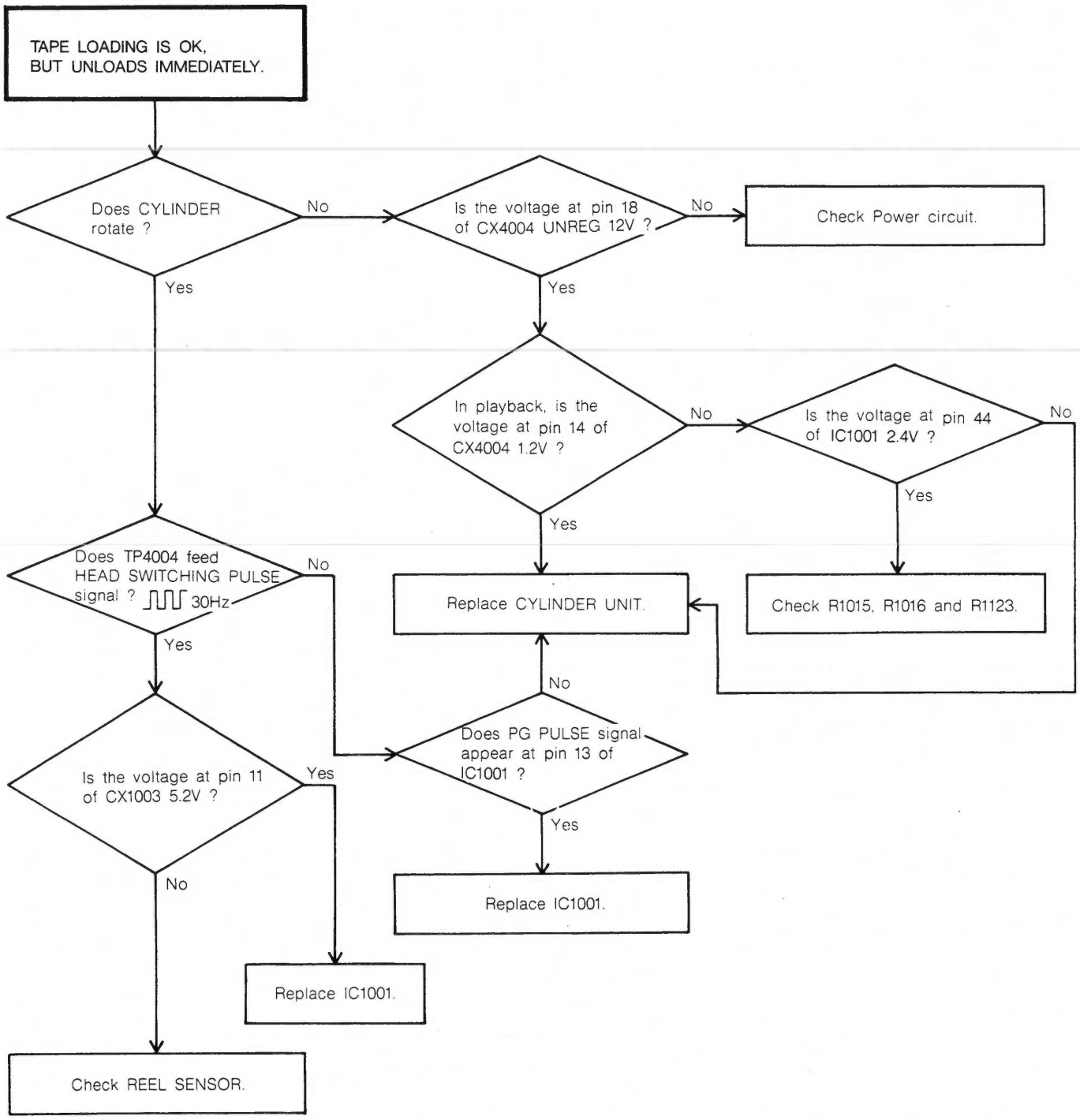
TROUBLESHOOTING GUIDE


WHEN INSERTING CASSETTE, IT EJECTS IMMEDIATELY
In another cassette tape does the same problem appear ?
No
Defective CASSETTE or FRONT LOADING UNIT.
Yes
In covering the infrared sensor, is pin 2 of IC1001 5V ?
No
Replace EOT/BOT PHOTO TRANSISTORS.
Yes
In cassette loading, is the pin 1 of CX1003 low for a moment ?
No
Check FRONT LOADING SWITCH.
Yes
Is EJECT position of FRONT LOADING GEAR OK ?
No
Check FRONT LOADING GEARS.
Yes
Check IC1001 circuit.

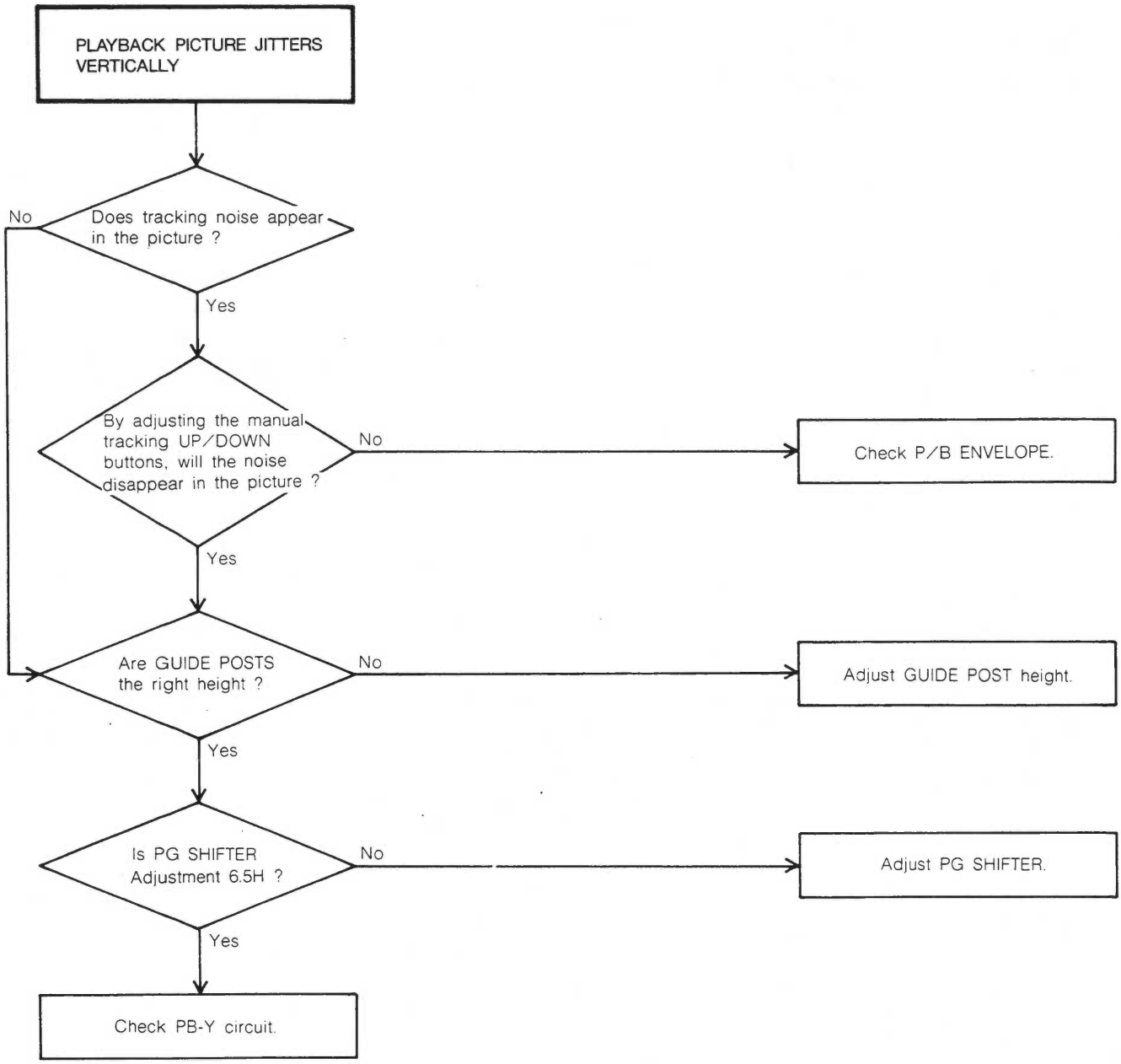
TROUBLESHOOTING GUIDE


FF/REW DO NOT WORK
When the FF/REW is pressed, does the PULSE appear at pin 15 of IC101 ?
No
Replace OS8001.
Yes
Is the voltage changing at pin 60 of IC1001 when you press FF/REW ?
No
Check M2001 and pin 74 of IC1001 lines.
Change IC101.
Yes
Is the voltage changing at pins 18 and 7 of CX1003 ?
No
Check Q1010 and peripheral circuit.
Yes
Check L1501 and DECK MECHANISM.

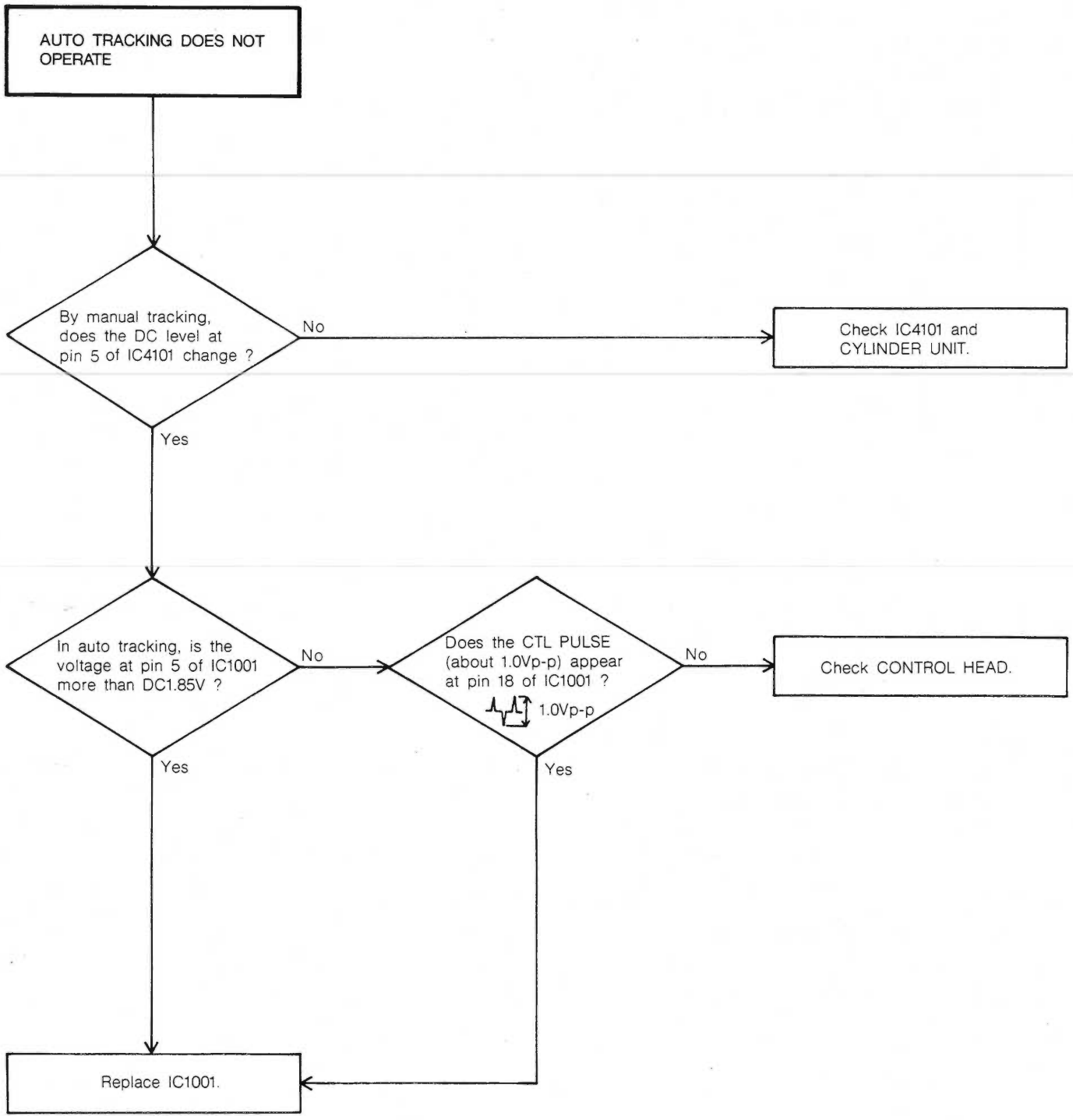
TROUBLESHOOTING GUIDE



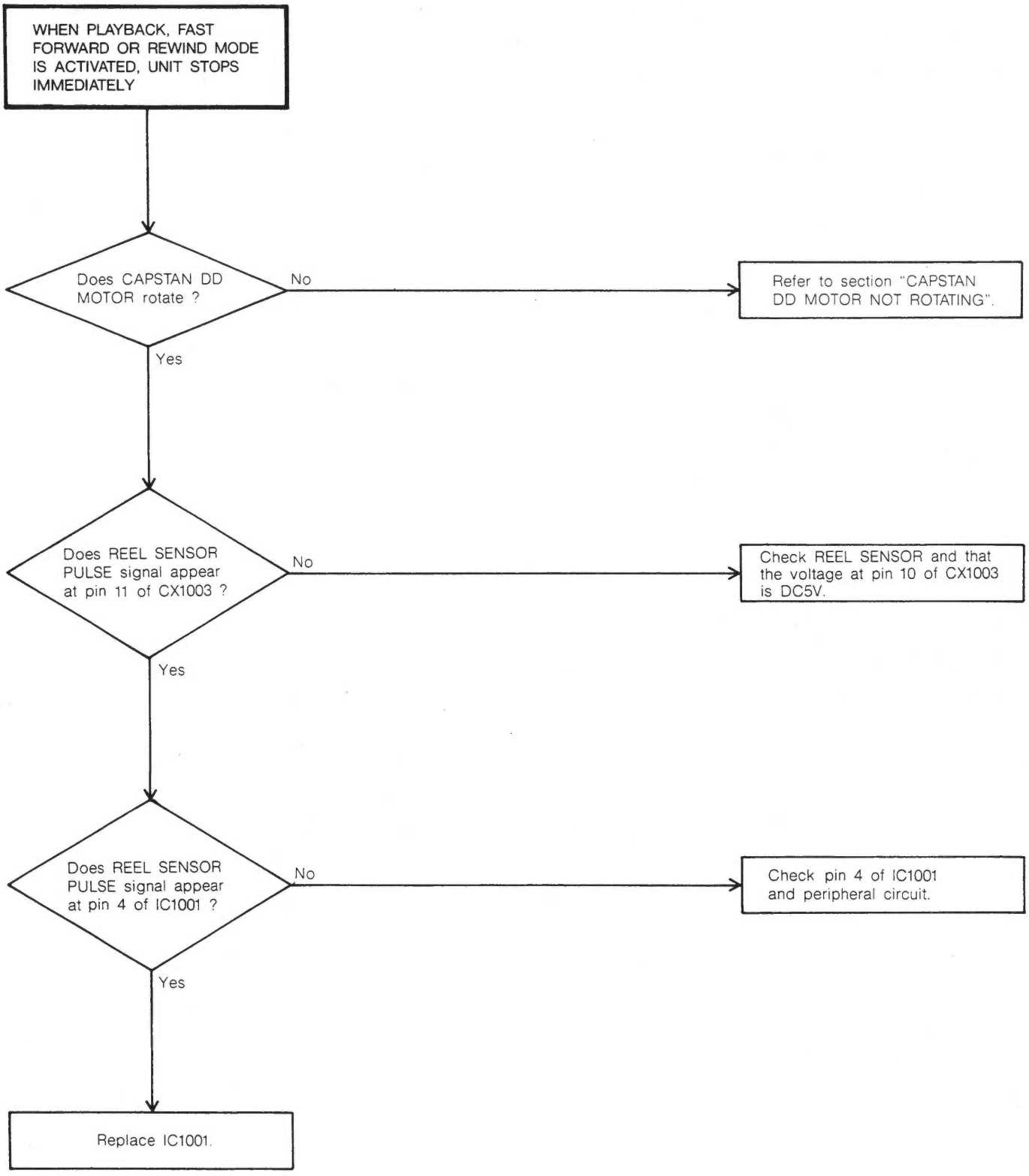
TROUBLESHOOTING GUIDE



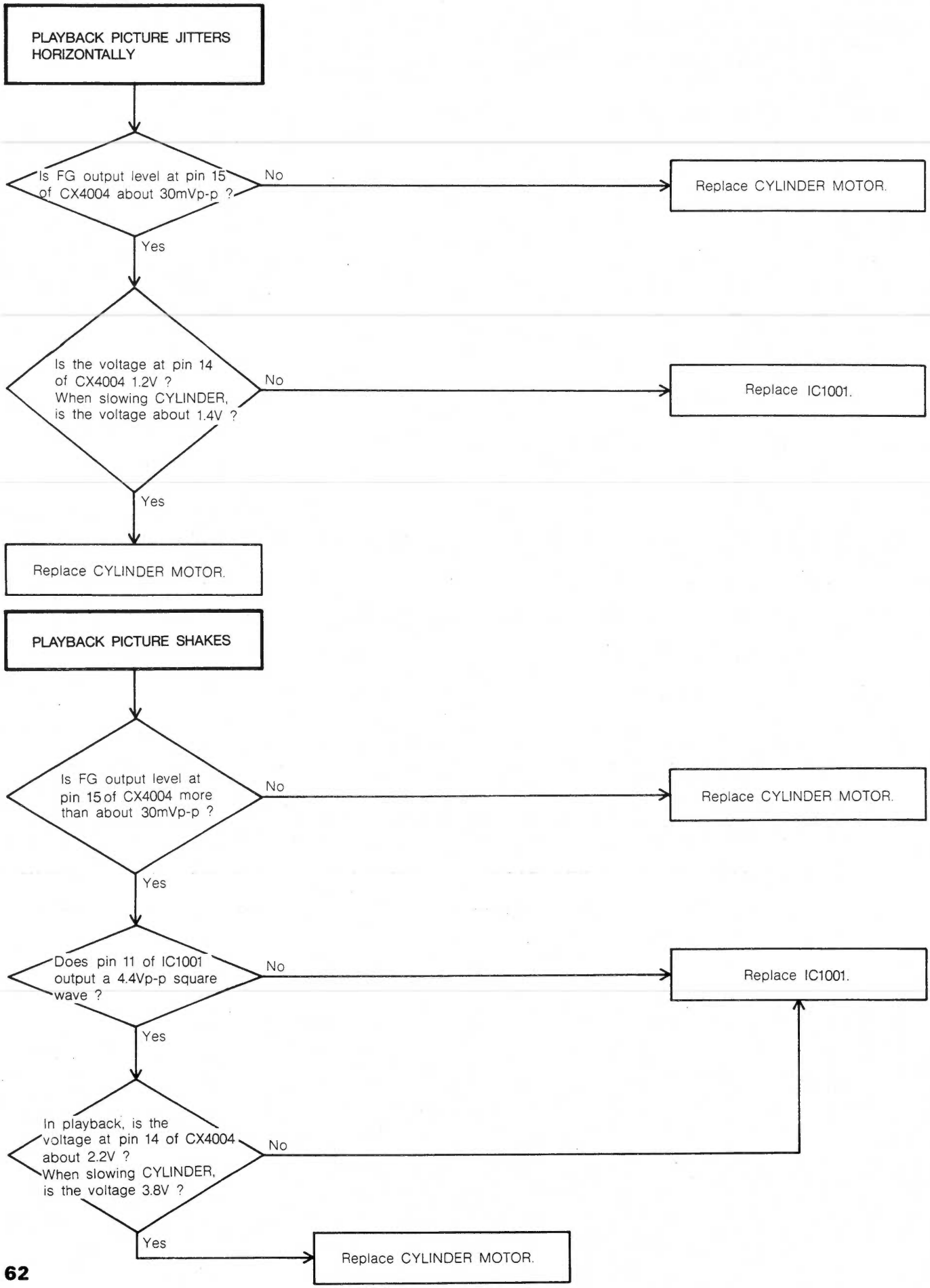
TROUBLESHOOTING GUIDE


AUTO TRACKING DOES NOT OPERATE
By manual tracking, does the DC level at pin 5 of IC4101 change ?
No
Check IC4101 and CYLINDER UNIT.
Yes
In auto tracking, is the voltage at pin 5 of IC1001 more than DC1.85V ?
No
Does the CTL PULSE (about 1.0Vp-p) appear at pin 18 of IC1001 ?
1.0Vp-p
No
Check CONTROL HEAD.
Yes
Yes
Replace IC1001.

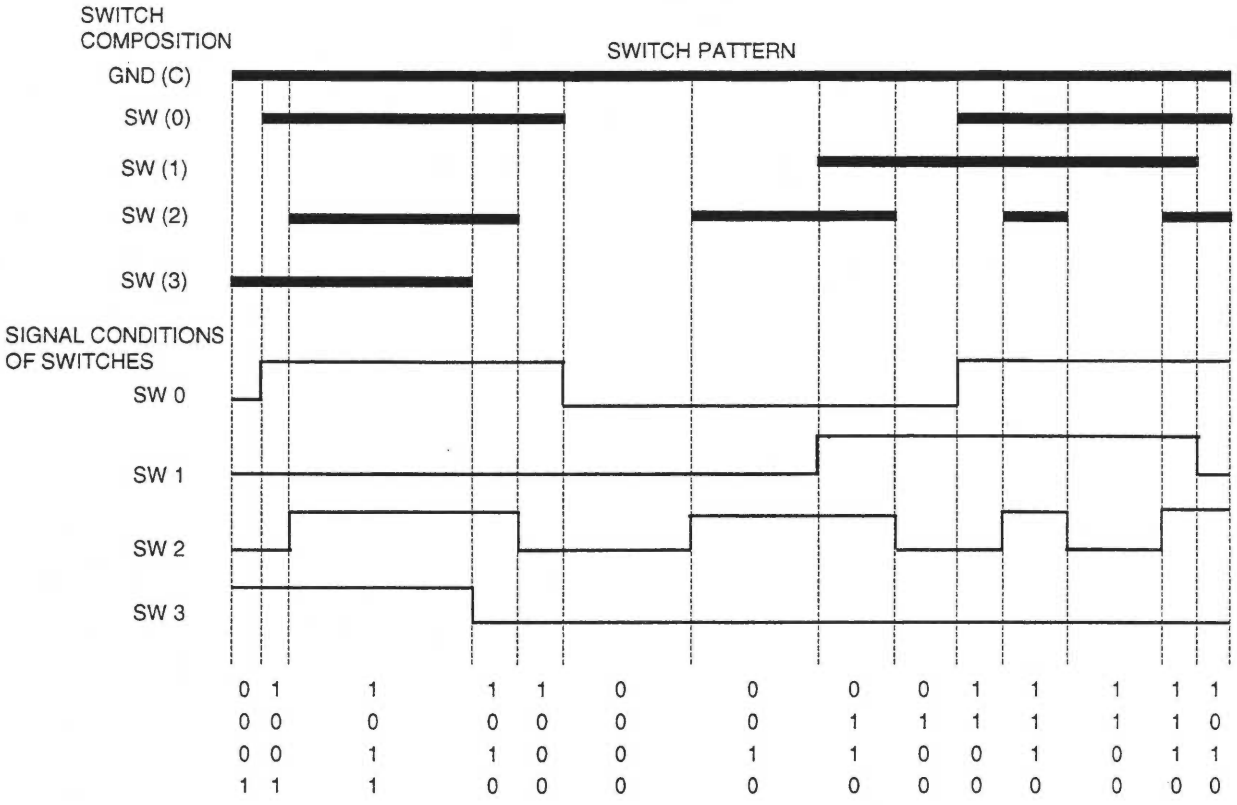
TROUBLESHOOTING GUIDE


WHEN PLAYBACK, FAST FORWARD OR REWIND MODE IS ACTIVATED, UNIT STOPS IMMEDIATELY
Does CAPSTAN DD MOTOR rotate ?
No
Refer to section "CAPSTAN DD MOTOR NOT ROTATING".
Yes
Does REEL SENSOR PULSE signal appear at pin 11 of CX1003 ?
No
Check REEL SENSOR and that the voltage at pin 10 of CX1003 is DC5V.
Yes
Does REEL SENSOR PULSE signal appear at pin 4 of IC1001 ?
No
Check pin 4 of IC1001 and peripheral circuit.
Yes
Replace IC1001.

TROUBLESHOOTING GUIDE


PLAYBACK PICTURE JITTERS HORIZONTALLY
Is FG output level at pin 15 of CX4004 about 30mVp-p ?
No
Replace CYLINDER MOTOR.
Yes
Is the voltage at pin 14 of CX4004 1.2V ? When slowing CYLINDER, is the voltage about 1.4V ?
No
Replace IC1001.
Yes
Replace CYLINDER MOTOR.
PLAYBACK PICTURE SHAKES
Is FG output level at pin 15 of CX4004 more than about 30mVp-p ?
No
Replace CYLINDER MOTOR.
Yes
Does pin 11 of IC1001 output a 4.4Vp-p square wave ?
No
Replace IC1001.
Yes
In playback, is the voltage at pin 14 of CX4004 about 2.2V ? When slowing CYLINDER, is the voltage 3.8V ?
No
Yes
Replace CYLINDER MOTOR.

SYSTEM SWITCH MODE


SWITCH COMPOSITION
SWITCH PATTERN
GND (C)
SW (0)
SW (1)
SW (2)
SW (3)
SIGNAL CONDITIONS OF SWITCHES
SW 0
SW 1
SW 2
SW 3
0 1 1 1 1 0 0 0 0 1 1 1 1 1
0 0 0 0 0 0 0 1 1 1 1 1 1 0
0 0 1 1 0 0 1 1 0 0 1 0 1 1
1 1 1 0 0 0 0 0 0 0 0 0 0 0

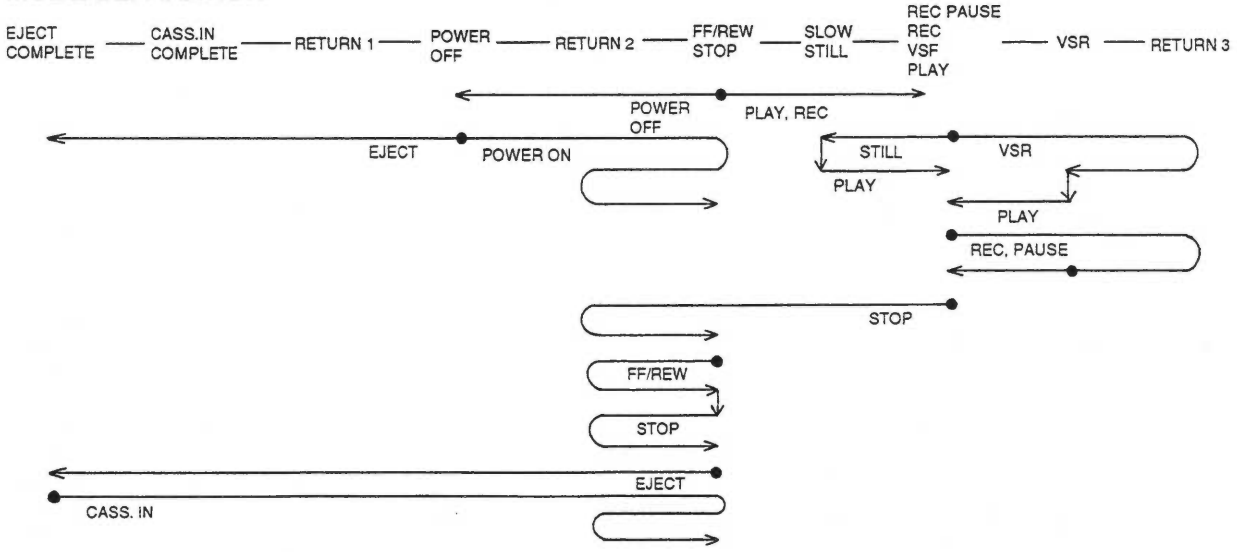
SW102				DECK MODE
SW 3	SW 2	SW 1	SW 0	
1	0	0	0	EJECT
1	0	0	1	CASSETTE UP
1	1	0	1	CASSETTE DOWN
0	1	0	1	RETURN 1
0	0	0	1	IDLE
0	0	0	0	RETURN 2
0	1	0	0	STAND BY
0	1	1	0	STILL
0	0	1	0	REC/PLAY
0	0	1	1	※
0	1	1	1	VSR
0	0	1	1	RETURN 3
0	1	1	1	

SW102				DECK MODE
SW 3	SW 2	SW 1	SW 0	
0	5	5	5	EJECT
5	0	5	5	STOP
5	5	0	5	PLAY
5	5	0	5	RECORDING
5	0	5	5	FAST FORWARD
5	0	5	5	REWIND
5	5	0	5	VSF
5	0	0	0	VSR
5	0	0	5	PAUSE/STILL (PLAY)
5	5	0	5	PAUSE/STILL (REC)
5	5	5	0	POWER OFF (TAPE IN)

VOLTAGE (V)

OUTPUT LIST OF THE MECHANICAL SWITCHES
(1 : SW ON)
※ : IT IS ONLY PASSED POINT. THERE IS NO DECK MODE.

MODE SEPARATION



IC DESCRIPTIONS

OEC9026B

Pin No.	Pin Name	I/O	Descriptions
1	VSAD	–	Ground.
2	EOT	I	Tape end sensor input signal.
3	BOT	I	Tape start sensor input signal.
4	REEL SENS	I	Input terminal of reel sensor.
5	VIDEO ENV DET	I	Input terminal of video RF envelope.
6	HI-FI ENV DET	I	Input terminal of HI-FI RF envelope.
7	DEW	I	Dew sensor input.
8	SLOW TRK OFFSET	I	Slow tracking offset adjustment.
9	CYL/CAP MOTOR SEL.	I	CYL/CAP motor select input.
10	VDAD	–	5V
11	DFG OUT	O	Output terminal of DFG AMP.
12	DFG IN	I	Input terminal of DFG AMP.
13	DPG IN	I	Input terminal of DPG comparator.
14	CFG IN	I	Input terminal of CFG AMP.
15	CFG OUT	O	Output terminal of CFG AMP.
16	VSSA	–	Ground.
17	VREF	–	Power on reset signal.
18	CTL AMP –	I	Input terminal of CTL AMP.
19	CTL AMP +	O	Output terminal of CTL AMP.
20	CTL –	I	Input terminal of CTL AMP negative.
21	CTL +	I/O	Input terminal of CTL AMP positive.
22	VDDA	–	5V
23	RESET B	–	Power reset.
24	TEST	–	Ground.
25	VV-H	O	Control output to select the output of PLAYBACK picture or EE picture.
26	V-PB-H	–	Open
27	SEARCH SPEED SW	I	Input for the speed selection of CUE/REV.
28	SYSTEM 1	–	Open
29	SYSTEM 2	–	Open
30	TRICK PB-H	O	During special playback, this pin will output HIGH.
31	REC-H	O	After the tape loading, when the REC key is activated, HIGH will be output.
32	LDM ON	O	During the actuating of the loading motor.

IC DESCRIPTIONS

OEC9026B

Pin No.	Pin Name	I/O	Descriptions
33	V.REC ST H	O	When the recording current flows through the head during the recording, this pin will output HIGH.
34	2HEAD/4HEAD	I	Input terminal for heads selecting 2 head/4 head.
35	LDM REV.	O	During the motor actuating of tape unloading, this pin will output HIGH.
36	SP-H	O	Output HIGH at tape speed SP.
37	LP-H	O	Output HIGH at tape speed LP.
38	VIDEO H. SW	O	Output terminal of VIDEO HEAD SW.
39	AUDIO H. SW	–	Open
40	H. AMP SW	–	Open
41	COLOR ROTARY	–	Open
42	DUMMY-V	O	Imitation vertical signal output.
43	VDD	–	5V
44	PWM0	O	PWM output for error signal of drum motor.
45	PWM1	O	PWM output for error signal of capstan motor.
46	DRM ON	I/O	Control the drum motor rotation direction.
47	CAP ON	I/O	Control the capstan motor rotation direction.
48	LDM PD/CAP PU	O	Control the capstan motor and loading motor torque direction.
49	BILINGUAL L	I	Input selection of audio type.
50	STEREO L	I	
51	HI-FI L	I	
52	EXT IN	I	Input of external input signal.
53	CAP LIMI I	I/O	3 State C-MOS output.
54	FL SW	I	Input terminal of front loading SW.
55	MS SW3	I	Mecha state switch terminal.
56	MS SW2	I	
57	MS SW1	I	
58	MS SW0	I	
59	BRK SOL	O	Output the HIGH signal while the deck latch magnet is activating.
60	CAP F/R	O	Output the LOW signal while the capstan motor is rotating in the direction of PB.
61	EXT H	–	Open
62	CLOCK 0	–	Terminal to connect the oscillator.
63	CLOCK 1	–	

IC DESCRIPTIONS

OEC9026B

Pin No.	Pin Name	I/O	Descriptions
64	VSS	–	Ground
65	TAB SW	I	Input terminal of judging the signal from cassette REC tab.
66	TAPE IN LED	O	Lights when a tape is inserted.
67	REC LED	O	Lights at REC mode.
68	ATR LED	O	Lights at ATR mode.
69	T-REC LED	O	Lights at T-REC mode.
70	PLAY LED	O	Lights at PLAY mode.
71	REPEAT LED	O	Lights at REPEAT mode.
72	CE	I	Timer output signal.
73	COUNTP IN	I	1 second pulse input for tape counter.
74	S. DATA IN	I	Serial data input signal.
75	S. DATA OUT	O	Serial data output signal.
76	S. CLK	I	Serial clock input signal.
77	COMP	–	Open
78	SYNC IN	I	Vertical synchronization signal input.
79	COUNTP OUT	O	1 second pulse input for tape counter.
80	CTL OUT	–	Open

IC DESCRIPTIONS

OEC7016B

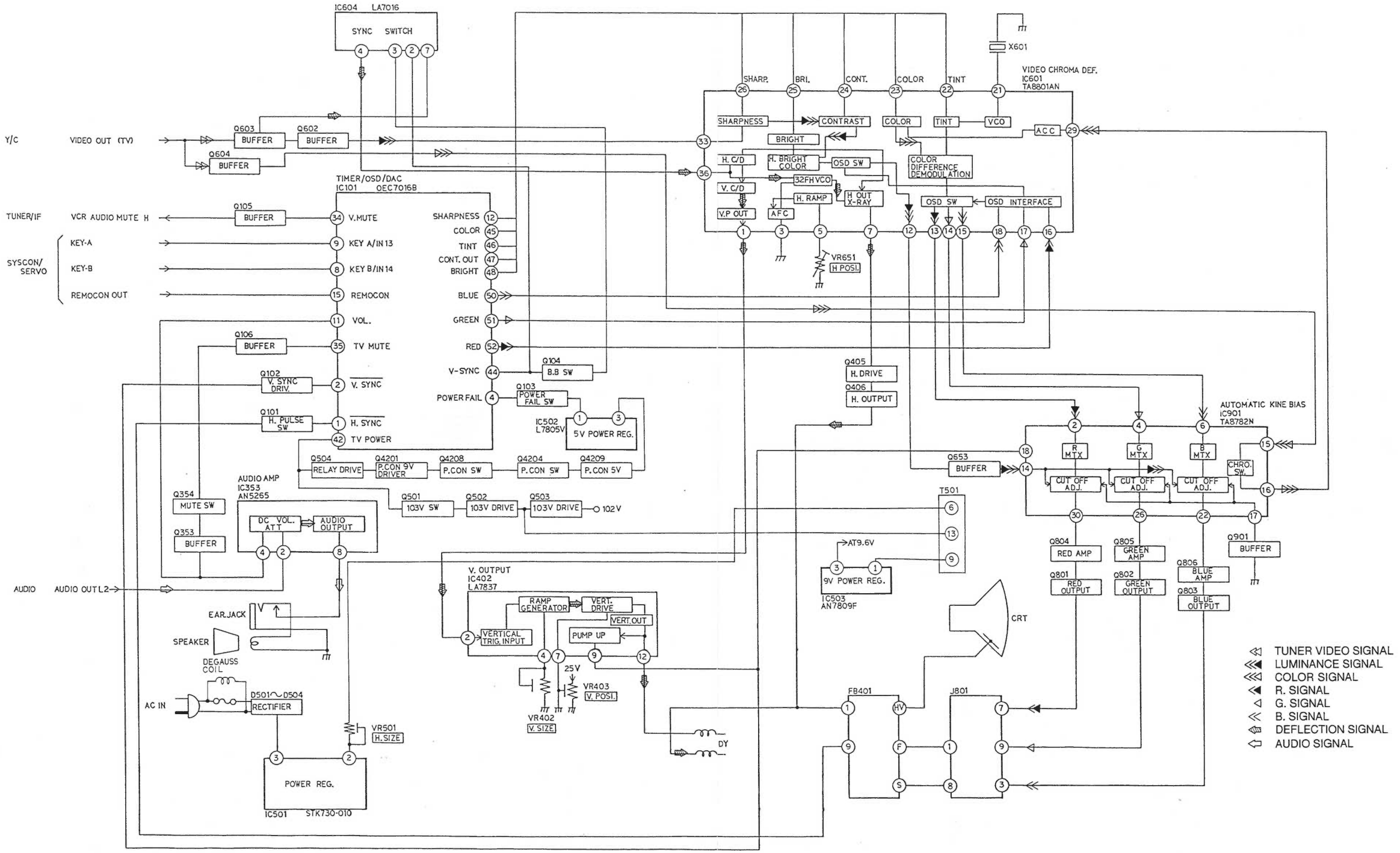
Pin No.	Pin Name	I/O	Descriptions
1	$\overline{\text{H. SYNC}}$	I	Horizontal synchronization signal input.
2	$\overline{\text{V. SYNC}}$	I	Vertical synchronization signal input.
3	ABL	I	Input terminal of sub bright adjustment.
4	POWER FAIL	I	Input for the detection of power interruption.
5	CONT. IN	I	Input terminal of sub contrast adjustment.
6	H. COUNT	I	Input terminal of horizontal count.
7	AFT	I	Input terminal of AFT voltage.
8	KEY B	I	Key B input.
9	KEY A	I	Key A input.
10	T→S CE	O	Port for the serial communication with syscon.
11	VOL.	O	Volume output.
12	SHARPNESS	O	Sharpness output.
13	INI 5	I	Initial setting of BRI./CONT. level during the TEXT BLANKING indication.
14	SST	I	Serial data input.
15	REMOCON	I	Remote control input signal.
16	STS	O	Serial data output.
17	S. CLK	O	Serial clock output.
18	A. VCC	–	+5V.
19	HLF	–	Filter connection terminal for CLOSED CAPTION.
20	R. VCO	–	Resistor connection terminal for CLOSED CAPTION.
21	V. HOLD	–	Vertical hole connection terminal for CLOSED CAPTION.
22	C. VIDEO	I	Composite video input.
23	CN VSS	I	Test input.
24	X IN	I	Terminal to connect the oscillator (8.000MHz).
25	X OUT	O	Terminal to connect the oscillator (8.000MHz).
26	VSS	–	Ground.
27	VCC	–	+5V.
28	OSC 1	I	Terminal to connect the oscillator (32.768KHz).
29	OSC 2	O	Terminal to connect the oscillator (32.768MHz).
30	$\overline{\text{RESET}}$	I	Input terminal of reset.
31	SD	I	Distinguish SD signal appearance.
32	T. CE	O	Output terminal of chip enable.

IC DESCRIPTIONS

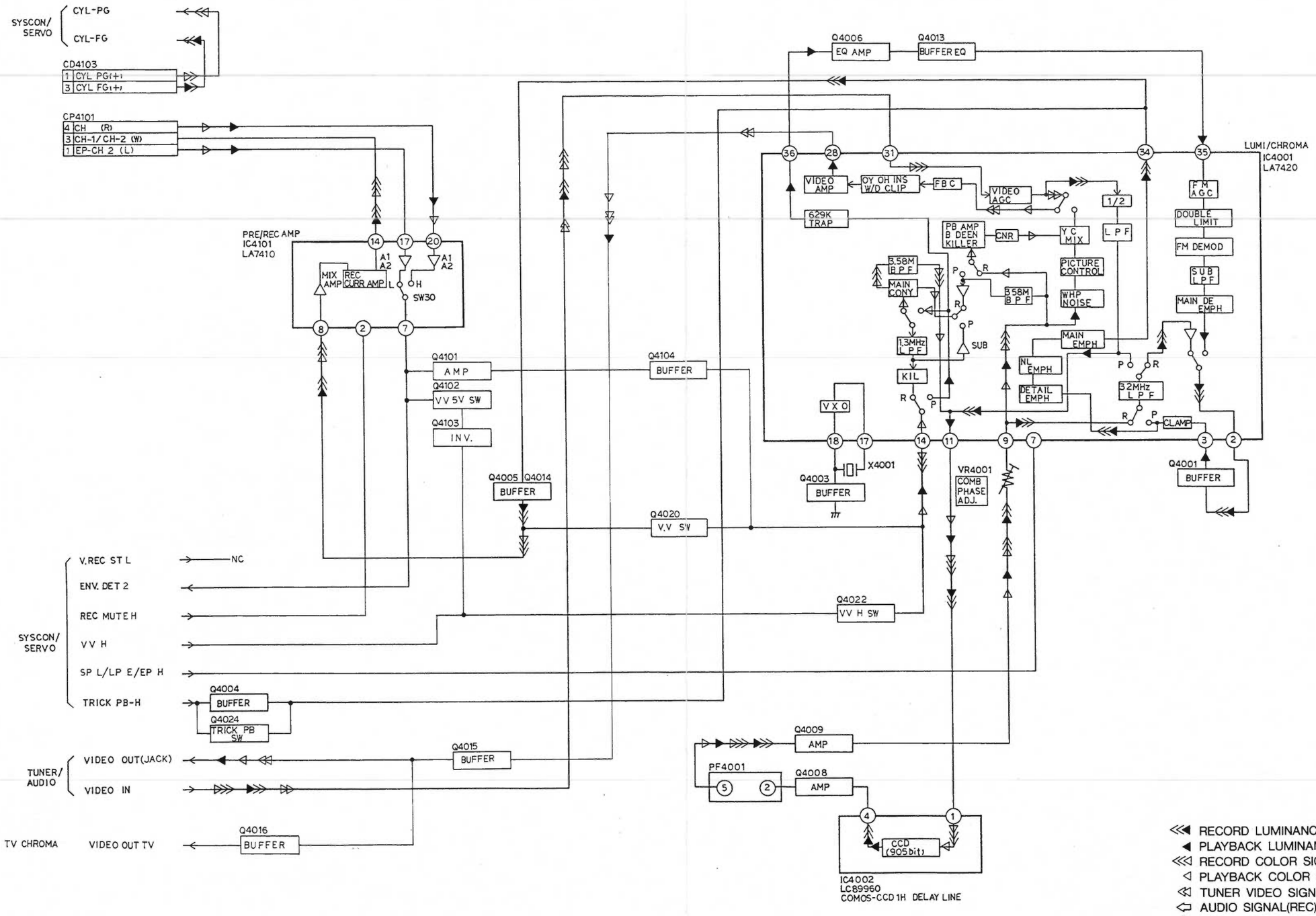
OEC7016B

Pin No.	Pin Name	I/O	Descriptions
33	MPX	O	Switching output of STEREO/SAP.
34	V. MUTE	O	Mute output during the special playback.
35	TV MUTE	O	Mute output to audio output amp.
36	TINT IN	I	Input terminal of sub tint adjustment.
37	SDA/DATA	I/O	Input and output terminal of data.
38	COLOR IN	I	Input terminal of sub color adjustment.
39	SCL/CLOK	I/O	This terminal is used for output of CLOCK for IC BUS.
40	AUDIO B	O	Switching output of Hi-Fi/STEREO.
41	VCR POWER	O	VCR power output.
42	TV POWER	O	TV power output.
43	AUDIO A	O	Switching output of Hi-Fi/STEREO.
44	V-SYNC	O	Imitation vertical sync output port during the blue back.
45	COLOR	O	Picture control output.
46	TINT	O	
47	CONTRAST	O	
48	BRIGHT	O	
49	BLANK	O	OSD/Characters of caption/outline output.
50	BLUE	O	Color signal blue output.
51	GREEN	O	Color signal green output.
52	RED	O	Color signal red output.

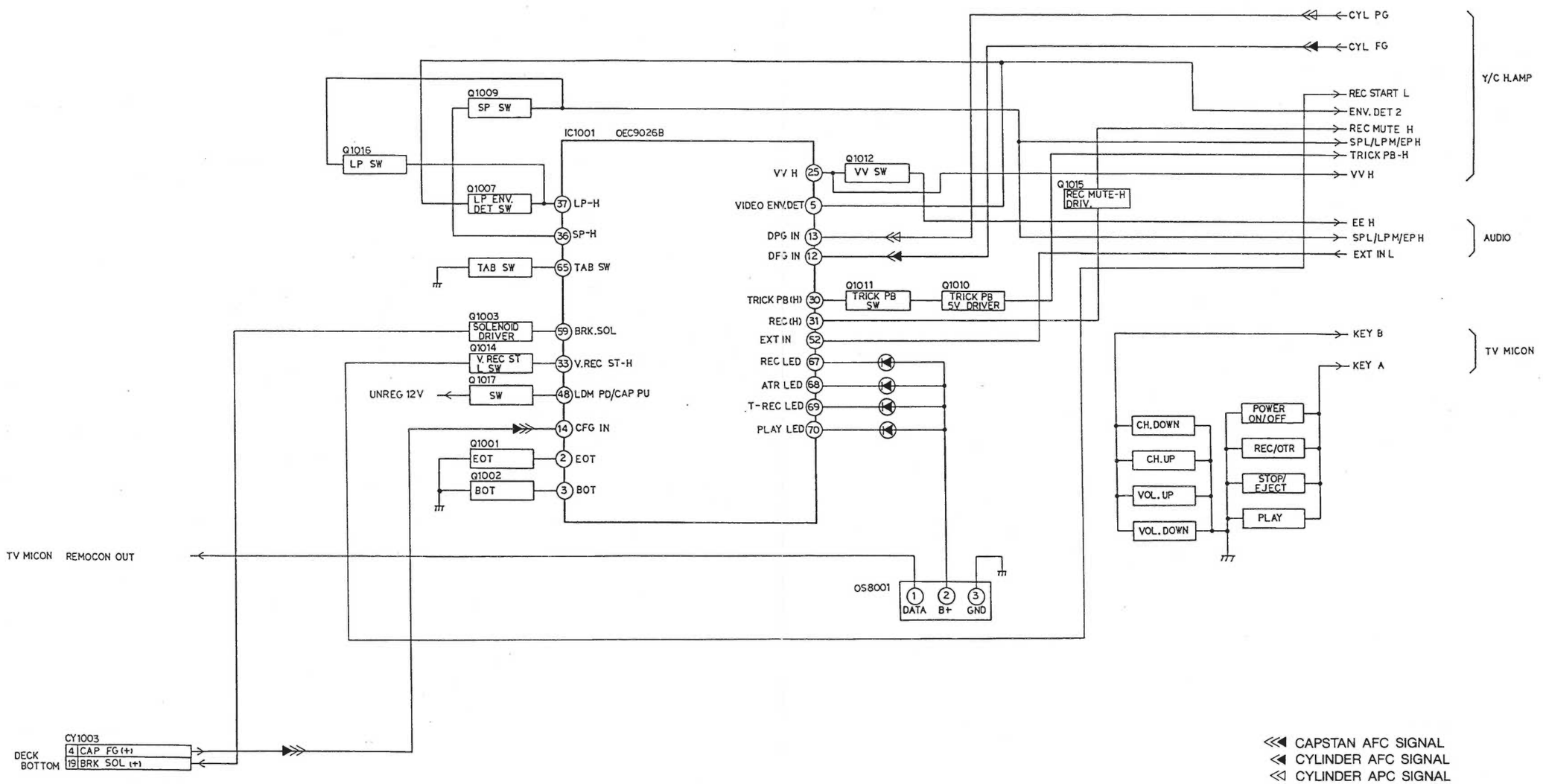
TV BLOCK DIAGRAM



VCR Y.C./HEAD AMP BLOCK DIAGRAM

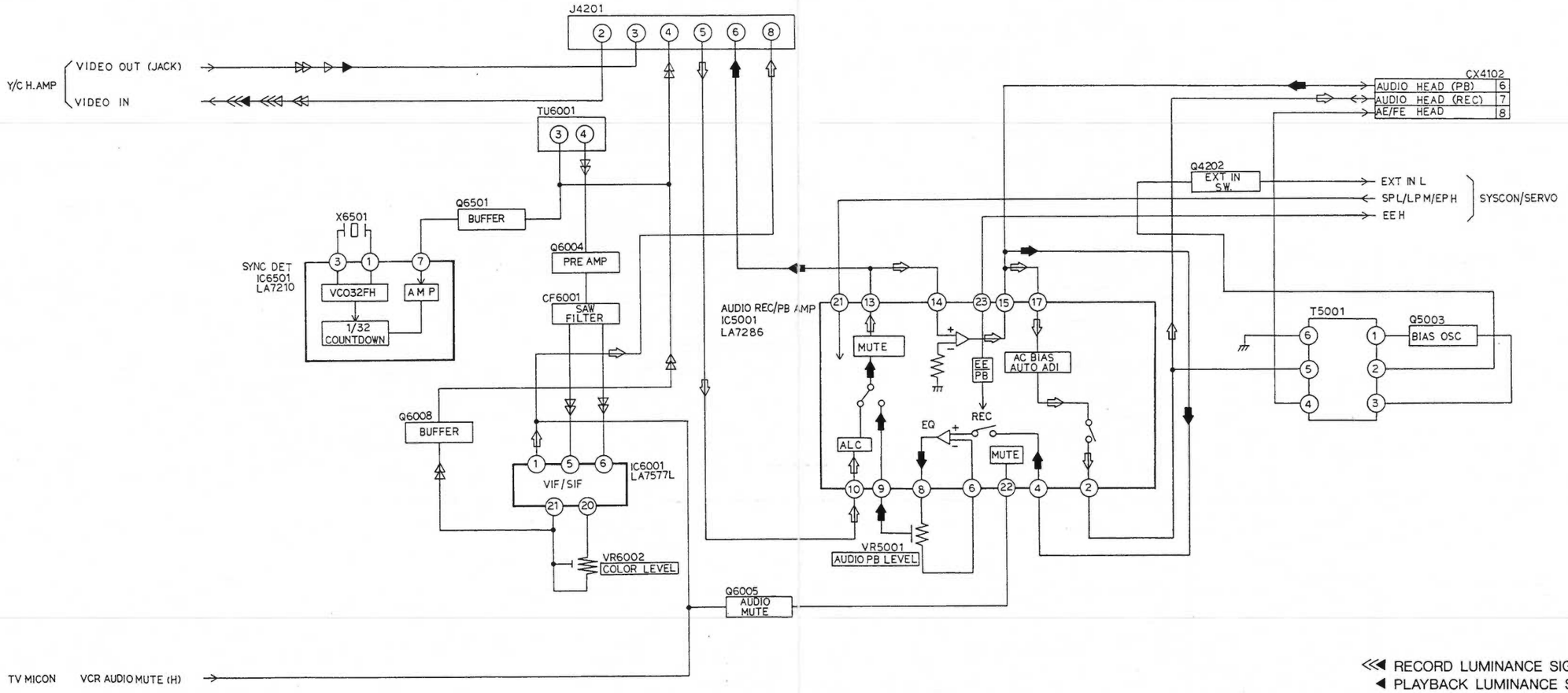


VCR SYSTEM CONTROL / SERVO / OPERATION BLOCK DIAGRAM



⋘◀ CAPSTAN AFC SIGNAL
◀ CYLINDER AFC SIGNAL
⋘ CYLINDER APC SIGNAL

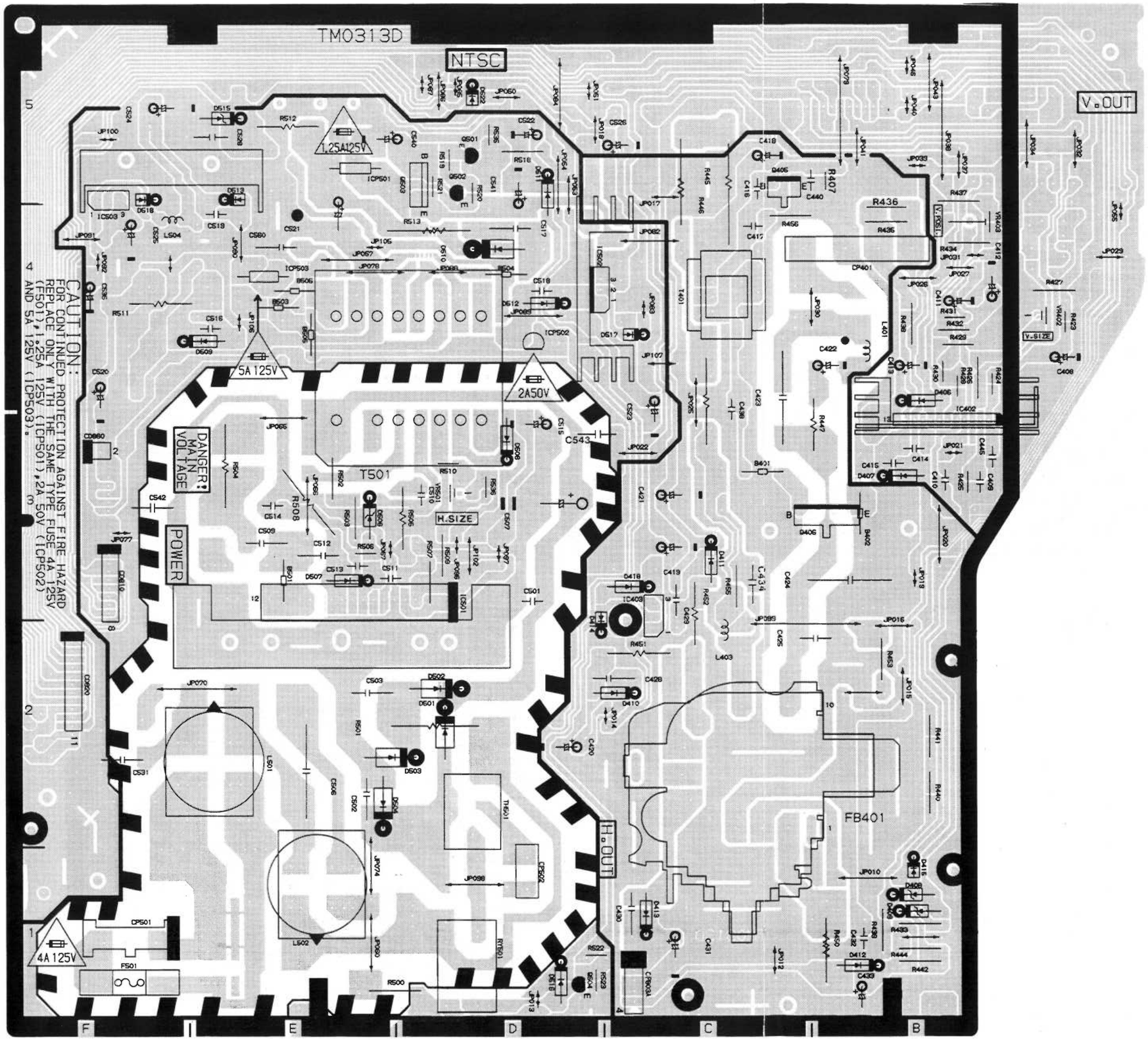
VCR TUNER/IF/AUDIO BLOCK DIAGRAM



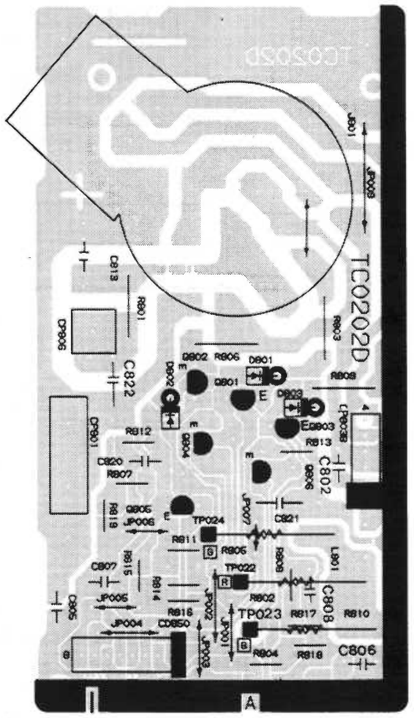
RECORD LUMINANCE SIGNAL
PLAYBACK LUMINANCE SIGNAL
RECORD COLOR SIGNAL
PLAYBACK COLOR SIGNAL
VIF/TUNER VIDEO SIGNAL
AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)

TV PRINTED CIRCUIT BOARDS

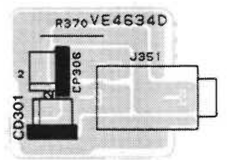
MAIN



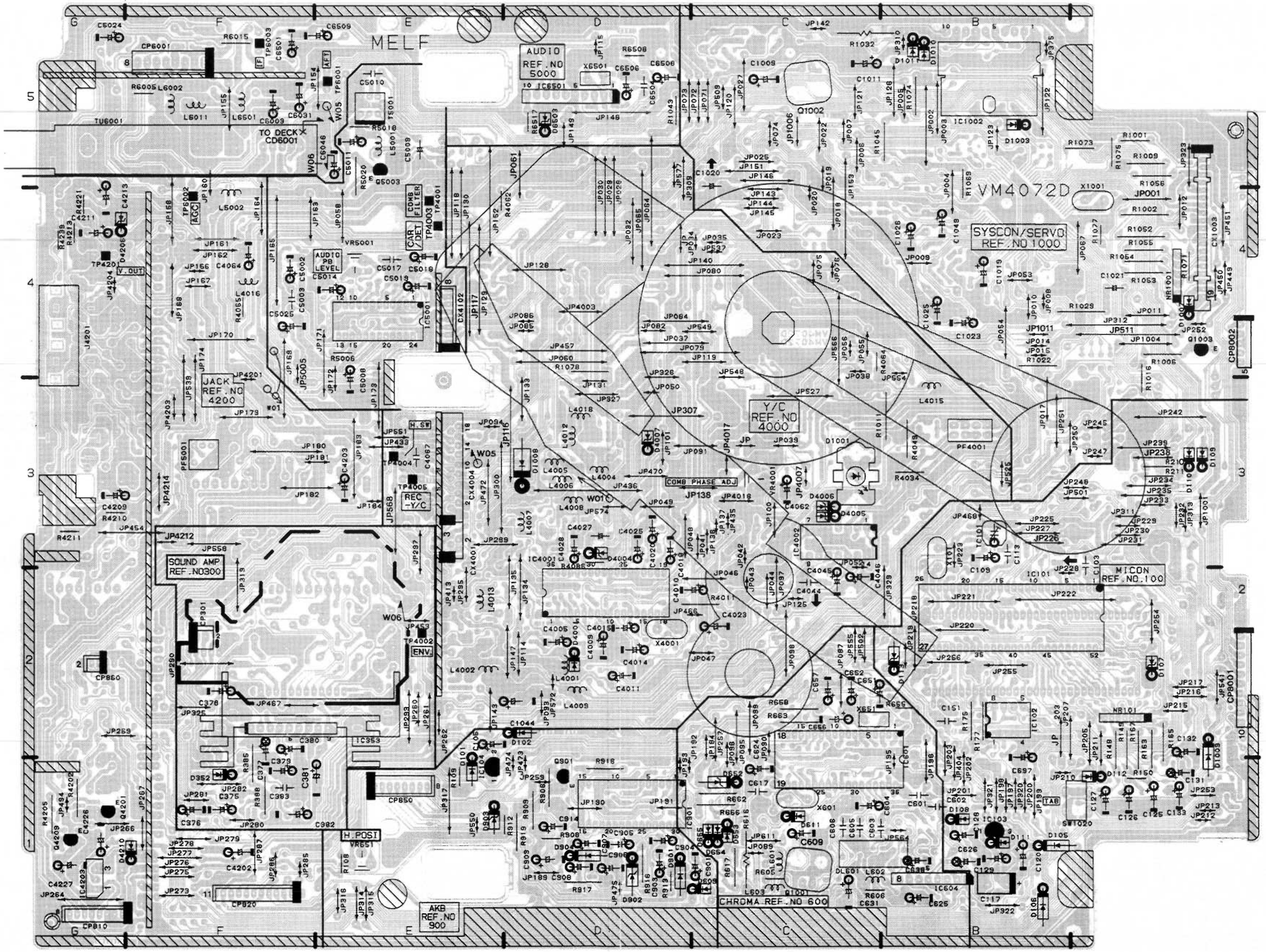
CRT



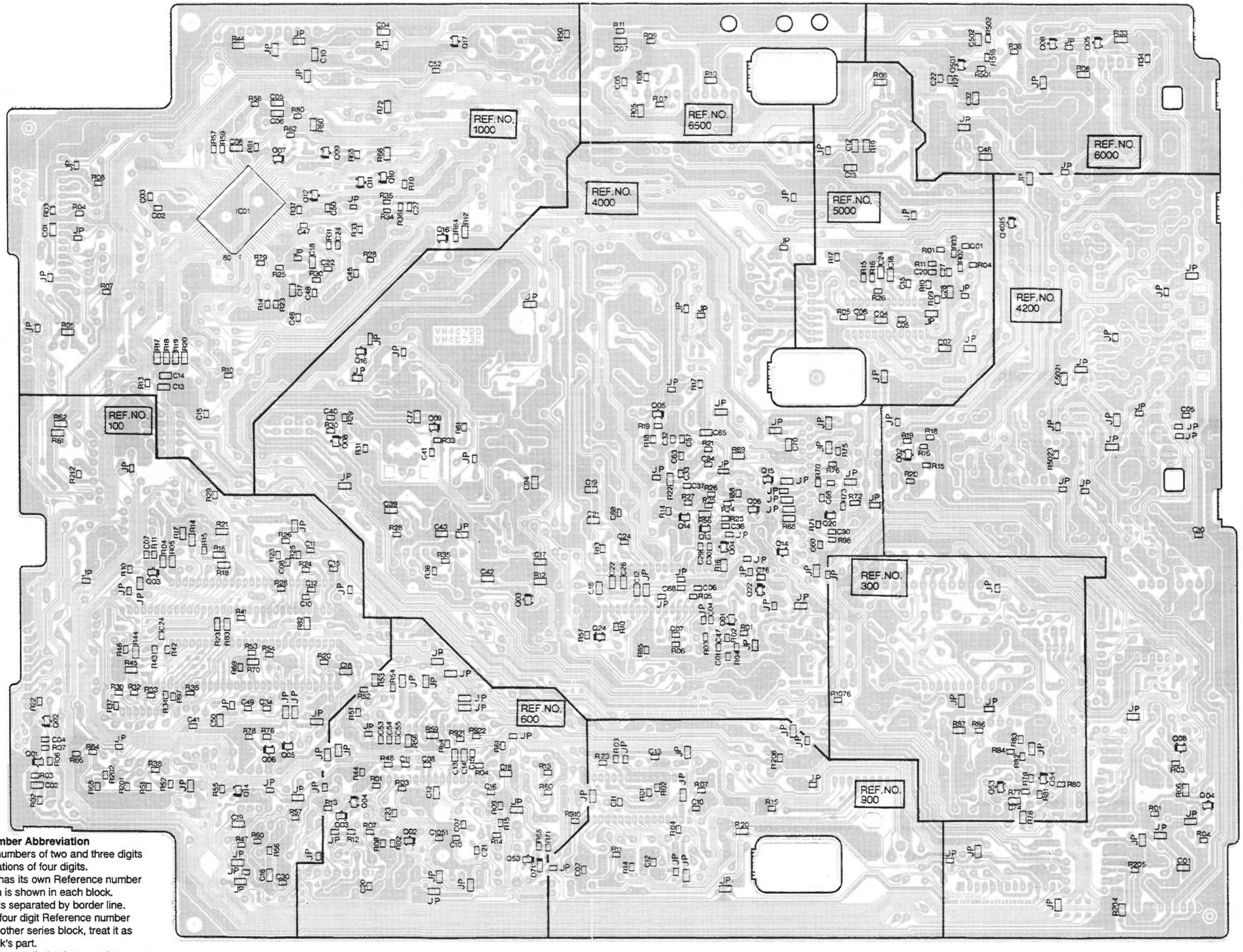
EARPHONE



VCR PRINTED CIRCUIT BOARD
MAIN
COMPONENT SIDE



VCR PRINTED CIRCUIT BOARD
MAIN
SOLDER SIDE



Reference Number Abbreviation

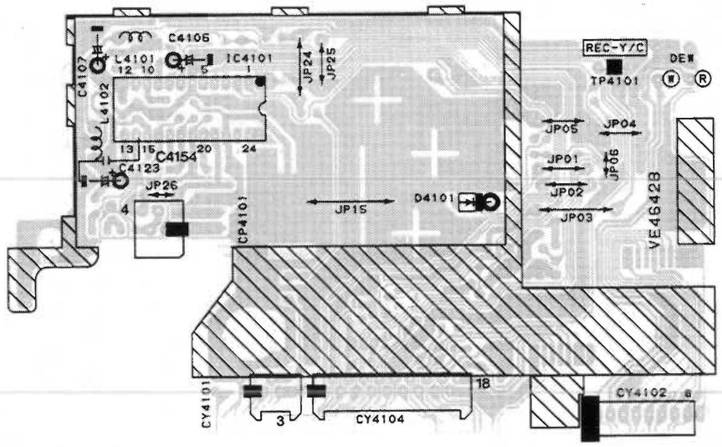
1. Reference numbers of two and three digits are abbreviations of four digits.
2. Each block has its own Reference number series which is shown in each block.
3. Each block is separated by border line.
4. If there is a four digit Reference number shown in another series block, treat it as original block's part.
5. This rule is not applied to jumper wires.

JP ..... JUMPER

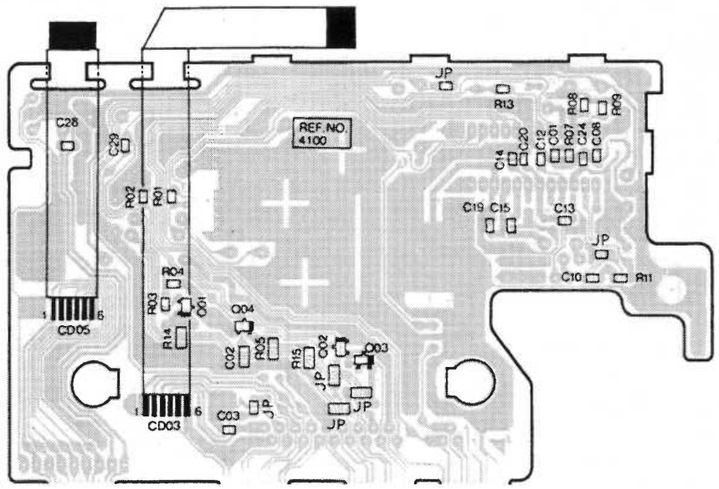
VCR PRINTED CIRCUIT BOARDS

HEAD AMP

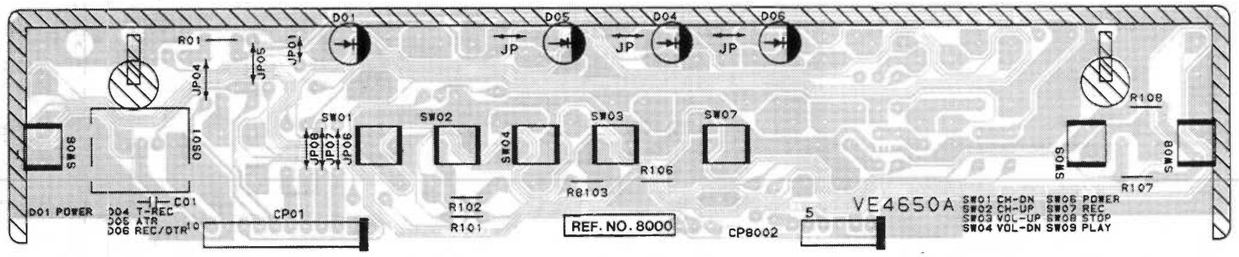
COMPONENT SIDE



SOLDER SIDE

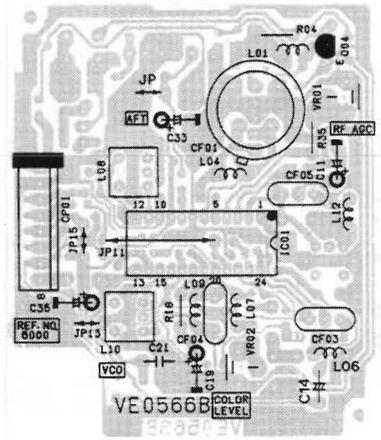


OPERATION

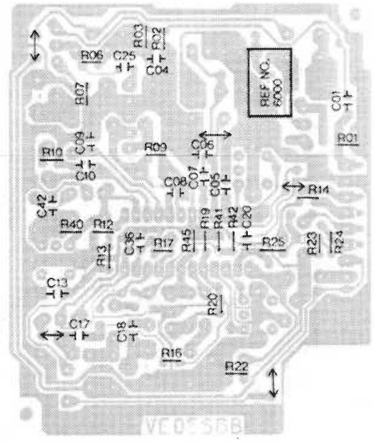


IF

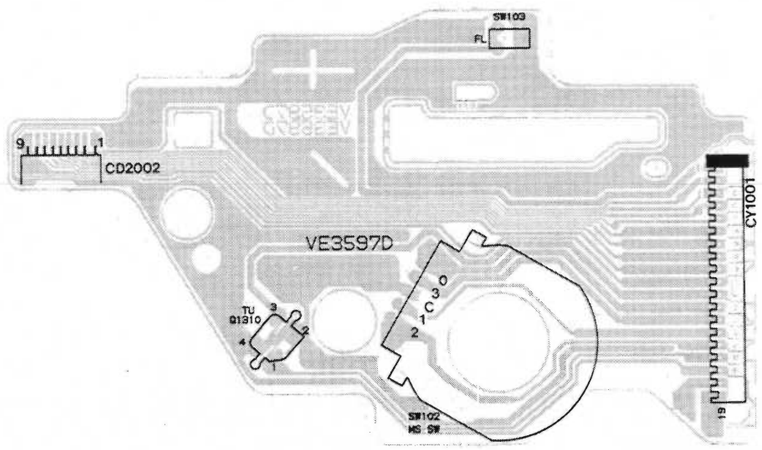
COMPONENT SIDE



SOLDER SIDE



DECK



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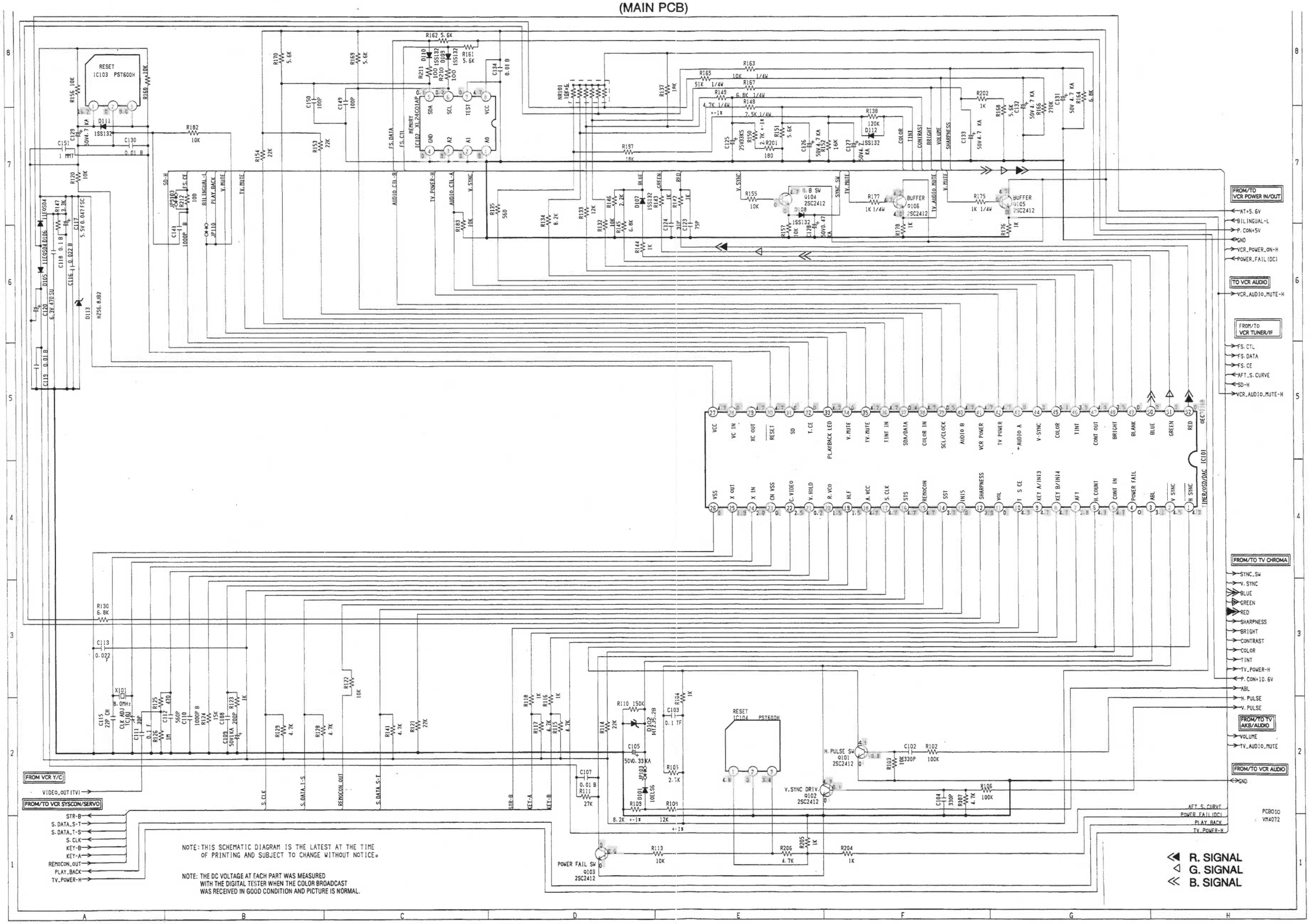
JP ..... JUMPER

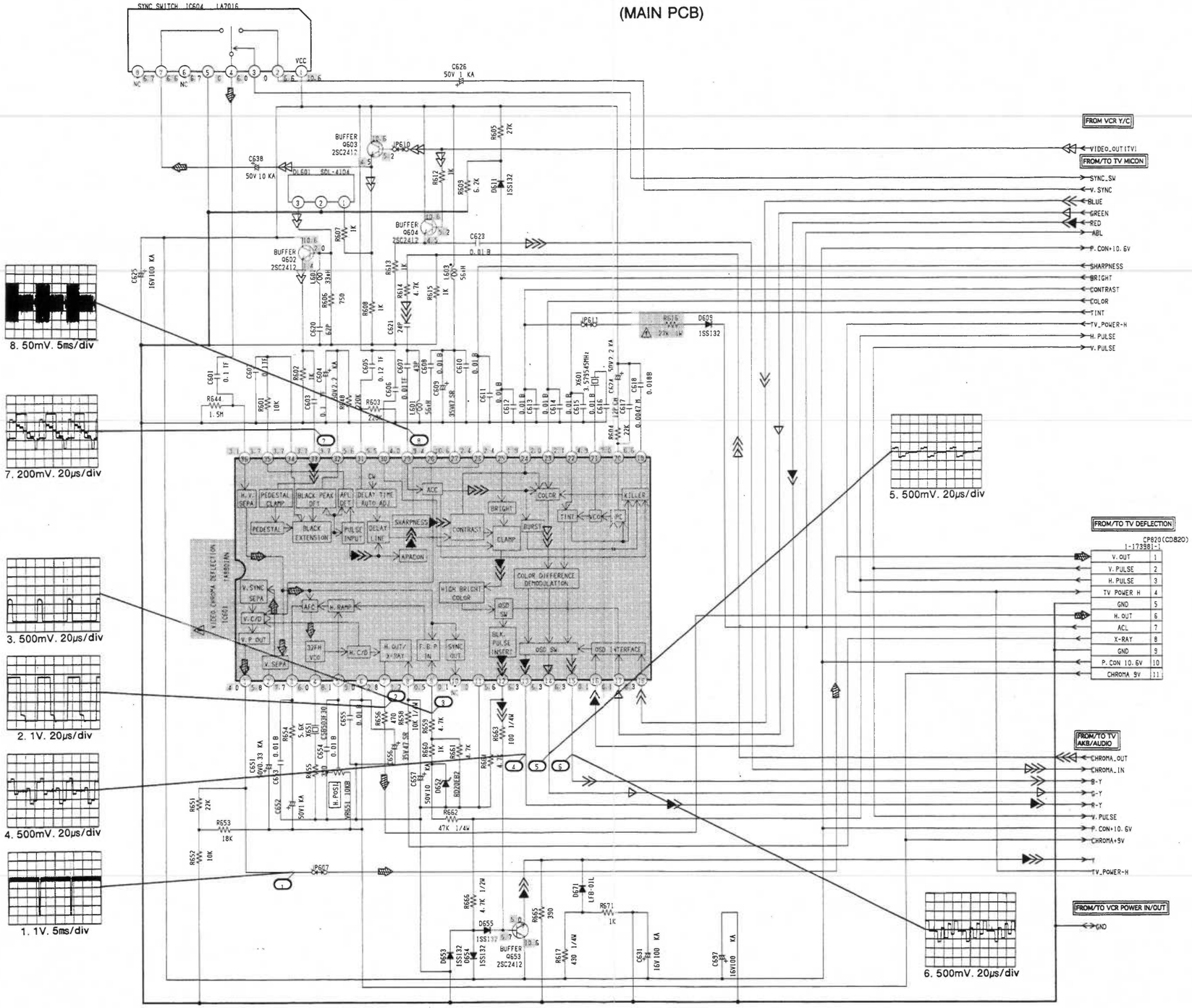
TV MICON SCHEMATIC DIAGRAM

(MAIN PCB)



TV CHROMA SCHEMATIC DIAGRAM

(MAIN PCB)


SYNC SWITCH IC604 LA7016
VCC
C626 50V 1 KA
FROM VCR Y/C
VIDEO_OUT(TV)
FROM/TO TV MICON
SYNC_SW
V. SYNC
BLUE
GREEN
RED
ABL
P. CON+10. 6V
SHARPNESS
BRIGHT
CONTRAST
COLOR
TINT
TV_POWER-H
H. PULSE
V. PULSE
BUFFER Q603 2SC2412
BUFFER Q604 2SC2412
BUFFER Q602 2SC2412
D601 SCL-410A
D611 1SS132
D609 1SS132
X601 3.5795MH
8. 50mV. 5ms/div
7. 200mV. 20μs/div
3. 500mV. 20μs/div
2. 1V. 20μs/div
4. 500mV. 20μs/div
1. 1V. 5ms/div
5. 500mV. 20μs/div
6. 500mV. 20μs/div
M. V. SEPA
PEDESTAL CLAMP
BLACK PEAK DET
APL DET
DELAY TIME AUTO ADJ
ACC
COLOR
KILLER
BRIGHT
TINT
VCOR
PC
PEDESTAL
BLACK EXTENSION
PULSE INPUT
DELAY LINE
SHARPNESS
CONTRAST
BURST
CLAMP
APACON
COLOR DIFFERENCE DEMODULATION
HIGH BRIGHT COLOR
OSD SW
V. SYNC SEPA
V. C/D
V. P. OUT
AFC
H. RAMP
32FH VCO
H. C/D
H. OUT/ X-RAY
F. B. P IN
SYNC OUT
BLK. PULSE INSERT
OSD INTERFACE
V. SEPA
FROM/TO TV DEFLECTION
CP820(CD820)
1-17398[-]
V. OUT 1
V. PULSE 2
H. PULSE 3
TV POWER H 4
GND 5
H. OUT 6
ACL 7
X-RAY 8
GND 9
P. CON 10. 6V 10
CHROMA 9V 11
FROM/TO TV AKB/AUDIO
CHROMA_OUT
CHROMA_IN
B-Y
G-Y
R-Y
V. PULSE
P. CON+10. 6V
CHROMA+9V
TV_POWER-H
FROM/TO VCR POWER IN/OUT
GND
BUFFER Q653 2SC2412
D655 1SS132
D654 1SS132
D653 1SS132
D671 LFB-01L
R671 1K
R666 4.7K 1/2W
R665 330
R617 430 1/4W
C631 16V100 KA
C637 16V100
R662 47K 1/4W
R653 18K
R652 10K
R651 22K
R667
H. POS(J) 10KB
D652 BZX84B2
C651 0V0.33 KA
C652 50V1 KA
C653 0.01B
C654 0.01B
C655 0.01B
C656 0.01B
C657 50V10 KA
R654 5.6K
R655 470
R656 470
R658 10K 1/4W
R659 4.7K
R660 1K
R661 4.7K
R663 100 1/4W
R664 4.7K
C638 50V 10 KA
C623 0.01B
C625 16V100 KA
C630 62P
C621 24P
R606 750
R607 1K
R608 1K
R609 6.2K
R610 1K
R612 1K
R613 1K
R614 4.7K
R615 1K
R605 27K
R616 27K 1W
L601 33uH
L602 56uH
L603 56uH
L604 56uH
C601 0.1 1F
C602 0.1 1F
C603 0.1
C604 0.1 KA
C605 0.12 1F
C606 0.01 1F
C607 0.01 1F
C608 0.01B
C609 0.01B
C610 0.01B
C611 0.01B
C612 0.01B
C613 0.01B
C614 0.01B
C615 0.01B
C616 0.01B
C617 12P CH
C618 0.0018
C624 50V2.2 KA
R601 10K
R602 1K
R603 220K
R604 220K
R644 1.5M
R645 22K
R646 2.2
R647 22K
R648 22K
C632 50V2.2 KA
C633 0.01B
C634 0.01B
C635 0.01B
C636 0.01B
C639 0.01B
C640 0.01B
C641 0.01B
C642 0.01B
C643 0.01B
C644 0.01B
C645 0.01B
C646 0.01B
C647 0.01B
C648 0.01B
C649 0.01B
C650 0.01B
C651 0.01B
C652 0.01B
C653 0.01B
C654 0.01B
C655 0.01B
C656 0.01B
C657 0.01B
C658 0.01B

TV AKB /AUDIO SCHEMATIC DIAGRAM

(MAIN PCB)

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL. THE RESISTOR MARKED F IS FUSE RESISTOR.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

FROM/TO TV CHROMA

CHROMA_OUT
CHROMA_IN
B-Y
G-Y
R-Y
Y
P. CON+10.6V
V. PULSE

R923 1K
R922 1K
R921 1K
R901 6.8K
R902 6.8K
R903 6.8K
C901 16V220 YK
C902 0.01 B

AUTOMATIC KINE BIAS (CRT)

R919 12 1/6W F

C903 50V1 LL
C904 50V2.2 LL
C905 50V1 LL
C906 50V2.2 LL
C907 50V1 LL
C908 50V2.2 LL
R904 1.5K
D904 RD7.5EB2

9. 2V. 20μs/div
10. 2V. 20μs/div
11. 2V. 20μs/div

R920 3.9K

BUFFER Q901 2SA1576
R906 5.6K
R907 1K
C910 0.01 B
C914 50V10 KA
C909 16V 470YK
R909 1.2K 1/2W

FROM/TO TV DEFLECTION

CP850 (CD850) 173981-8

SS	8
B-C	7
B	6
GND	5
G-C	4
G	3
R-C	2
R	1

R913 47
R914 47
R915 47
R910 2.2K
R911 2.2K
R912 2.2K
R916 1K 1/4W
R917 1K 1/4W
R918 1K 1/4W
D901 RD12EB2
D902 RD12EB2
D903 MTZJ12B
C911 39P
C912 39P
C913 39P

FROM/TO VCR POWER IN/OUT

GND

FROM TV MICON

VOLUME
TV_AUDIO_MUTE

BUFFER Q353 2SC2412
R374 10K
C374 0.001 B
R377 1K
R381 1K
D352 1SS132
R382 390
R383 1K
R385 100 1/2W
R378 3.9K
MUTE SW Q354 2SC2412
R380 3.9K
C375 50V 1 KA
C376 16V 10 KA
R384 1.2K

AUDIO AMP IC353 AN5765

DC VOL. ATT
MUTE
AUDIO OUTPUT
GND
Vcc1
Vcc2

C377 16V 10 KA
C378 50V1 KA
C379 16V 10 KA
R386 560
C380 16V 10 KA
R387 10K
C381 25V470 YK
C382 25V47
R388 4.7K
C383 0.047 M

FROM VCR AUDIO

AUDIO_OUT-L-2
JP305
JP307

(EARPHONE PCB)

CP301 171825-2
L SP OUT
GND
L-SP-OUT
GND
CD301 06112390A
EAR JACK J351 TC38-001
R370 68 1/2W
CP306 2-171825-2
SP OUT
GND
CD300 8D12240A
SP353 SPEAKER 8ohm, 1W SQ8J72

PCB390 VE4634

FROM TV POWER

(CD860) CP860 173981-2

SOUND B+	1
SOUND GND	2

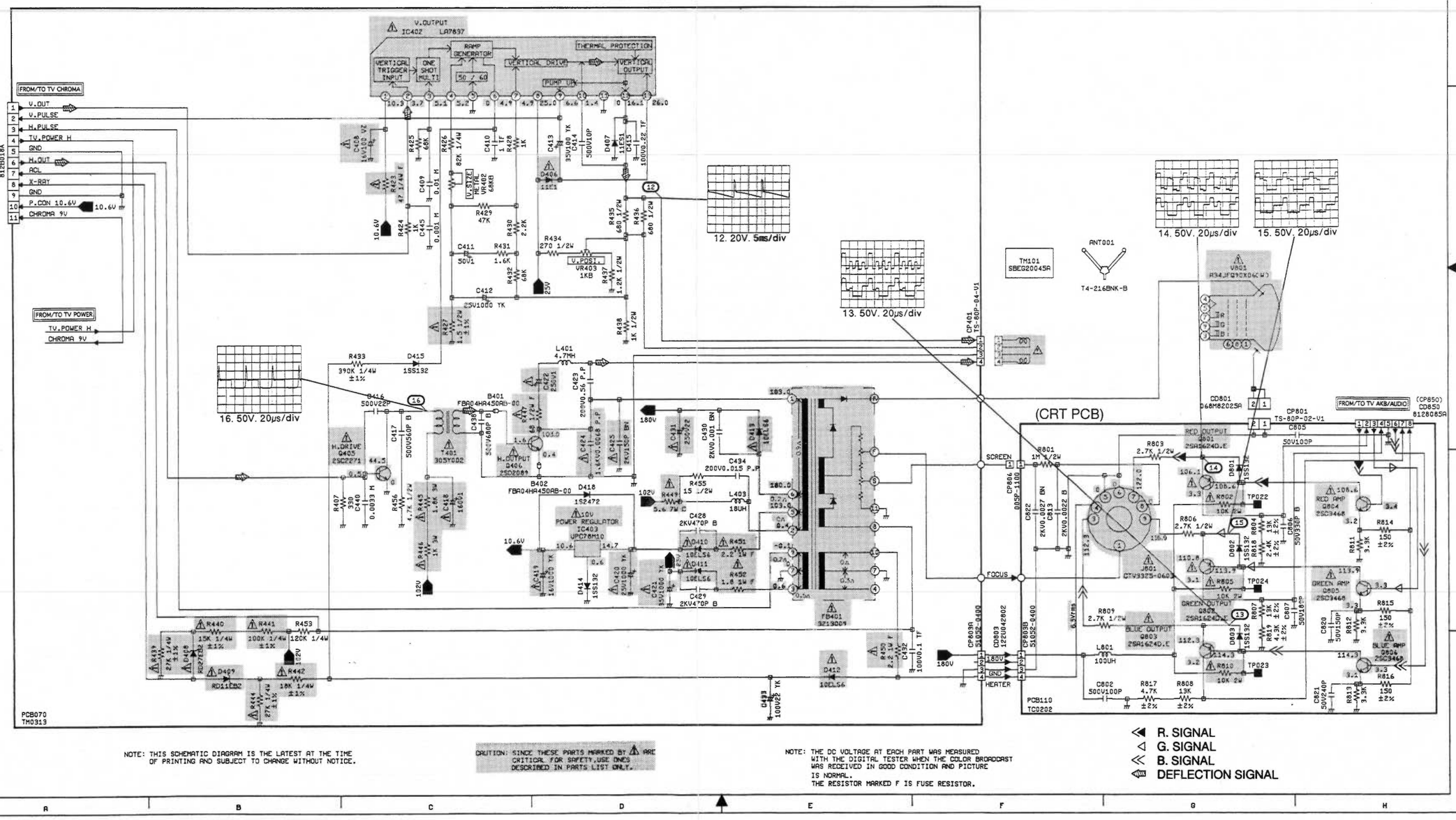
GND

LUMINANCE SIGNAL
COLOR SIGNAL
R. SIGNAL
G. SIGNAL
B. SIGNAL
AUDIO SIGNAL

PCB010 VM4077

TV DEFLECTION SCHEMATIC DIAGRAM

(MAIN PCB)



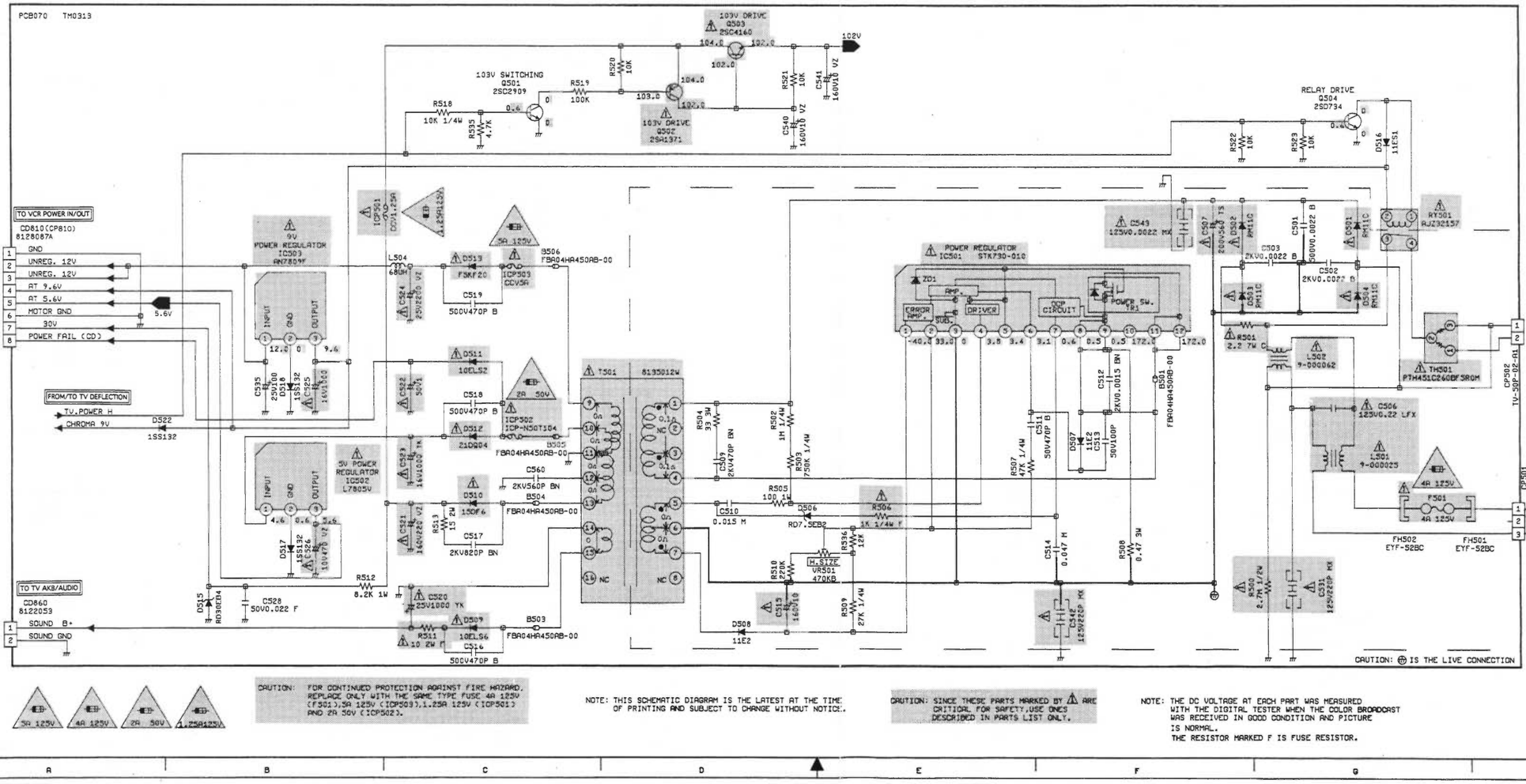
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.
THE RESISTOR MARKED F IS FUSE RESISTOR.

TV POWER SCHEMATIC DIAGRAM

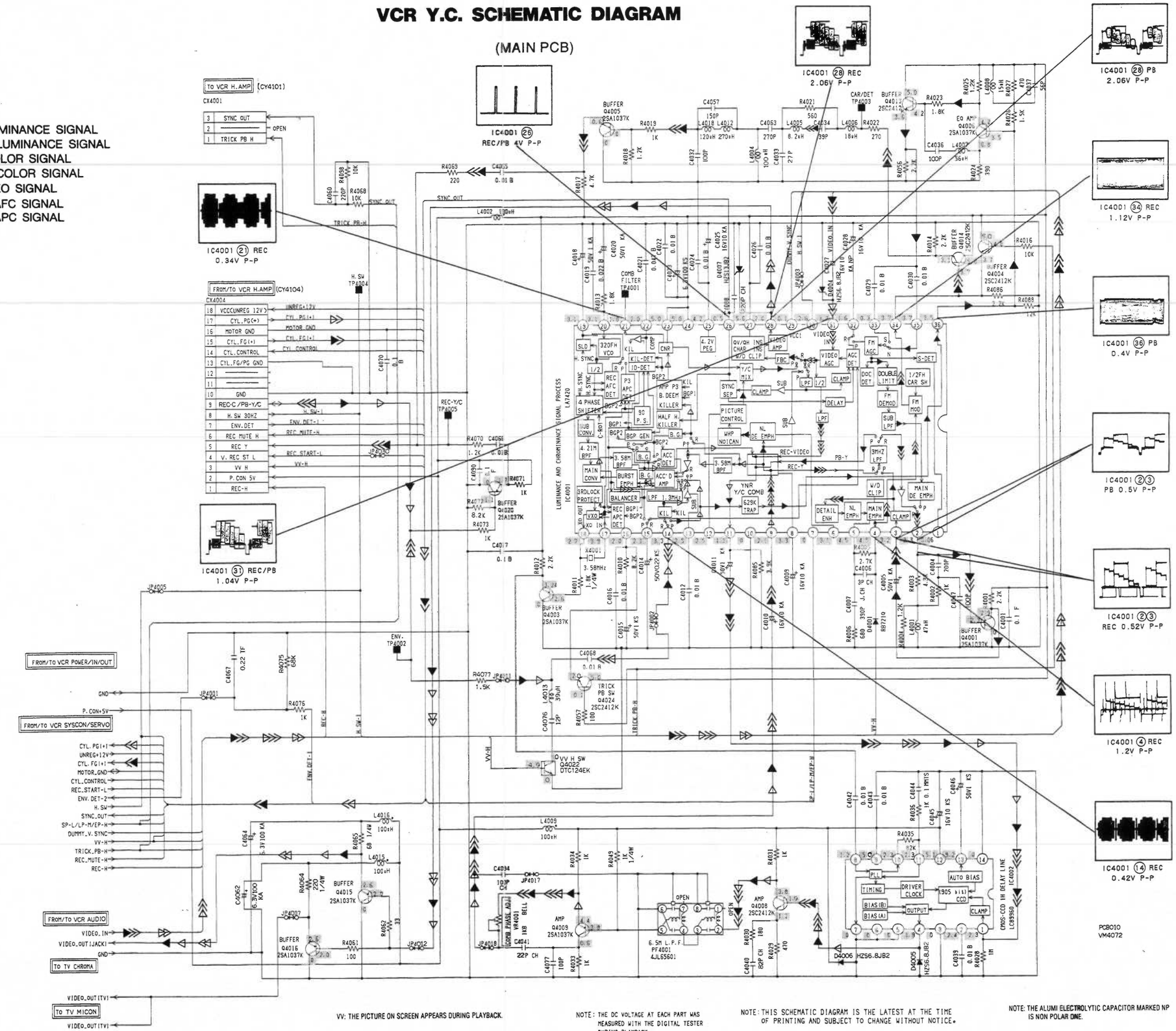
(MAIN PCB)



VCR Y.C. SCHEMATIC DIAGRAM

(MAIN PCB)

- RECORD LUMINANCE SIGNAL
- PLAYBACK LUMINANCE SIGNAL
- RECORD COLOR SIGNAL
- PLAYBACK COLOR SIGNAL
- TUNER VIDEO SIGNAL
- CYLINDER AFC SIGNAL
- CYLINDER APC SIGNAL



VV: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

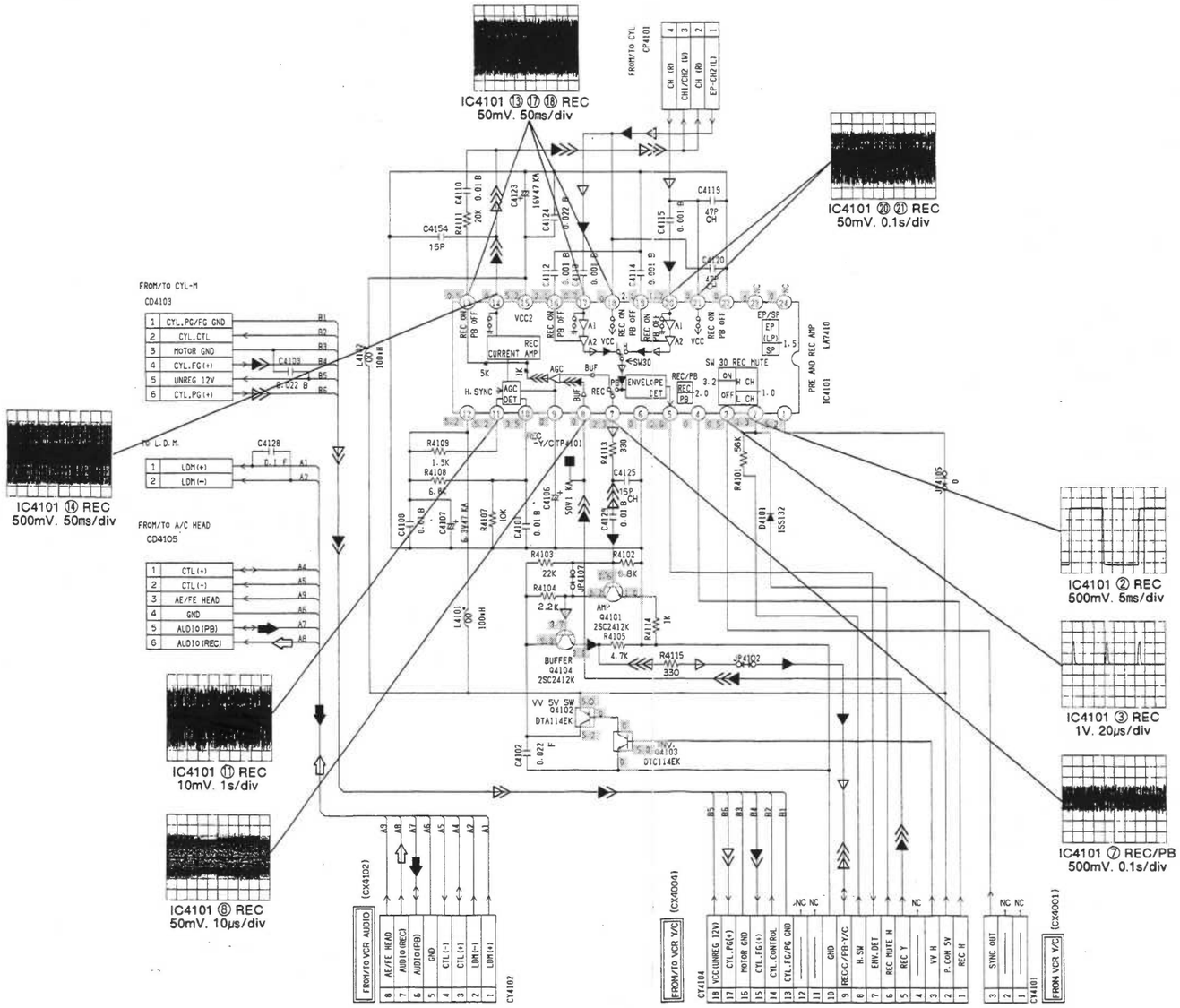
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

VCR HEAD AMP SCHEMATIC DIAGRAM

(HEAD AMP PCB)



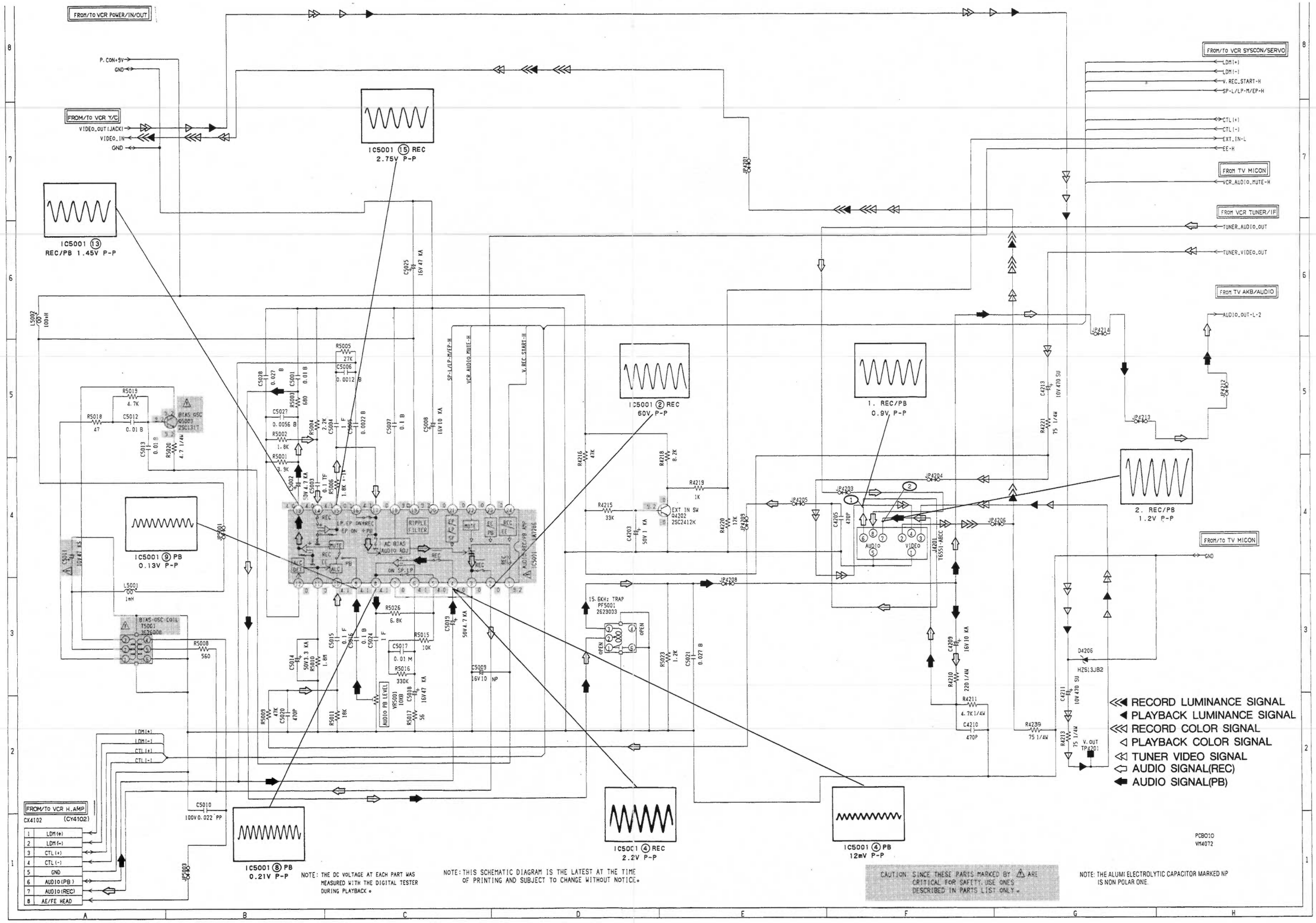
VV: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

VCR AUDIO SHEMATIC DIAGRAM

(MAIN PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

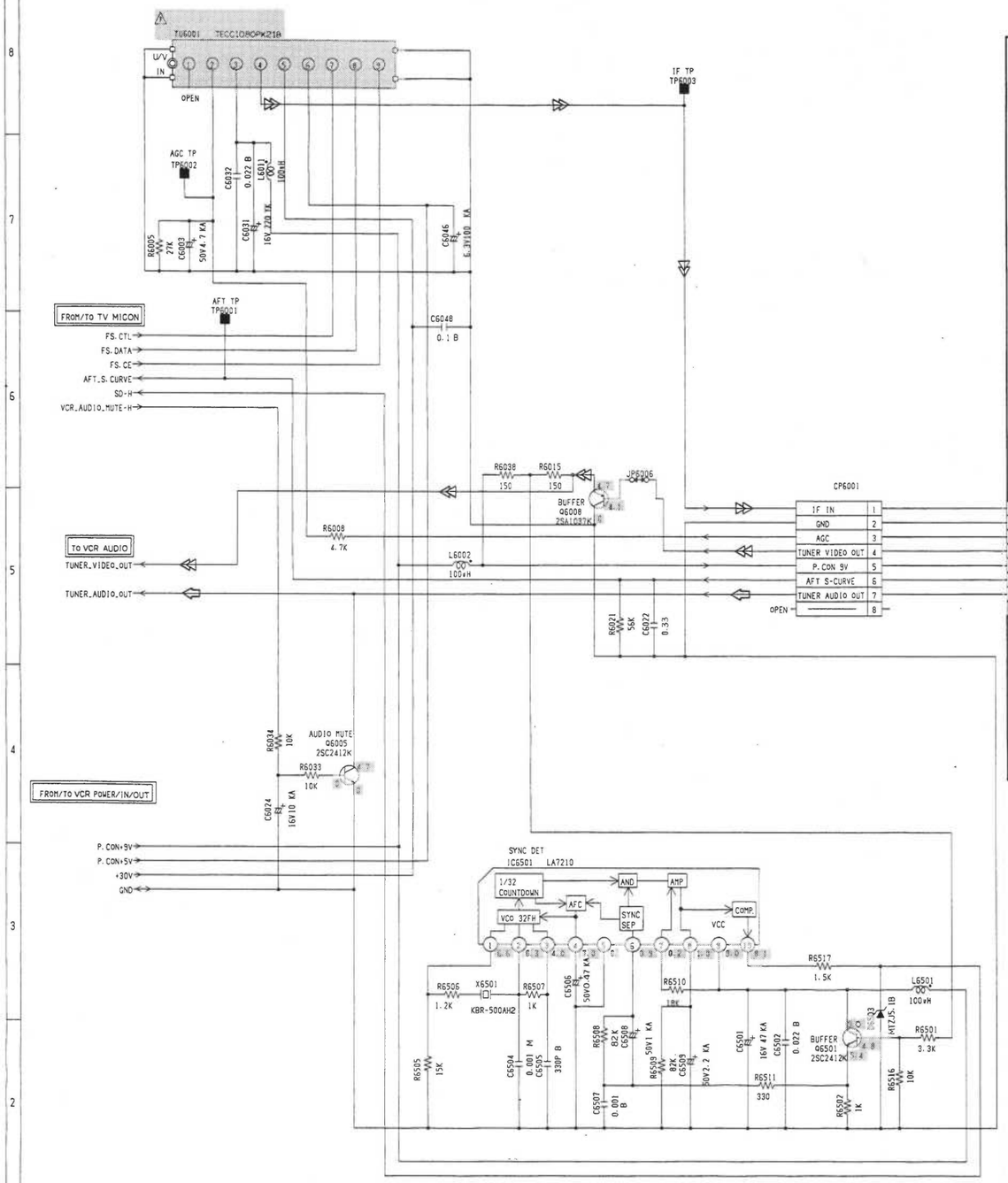
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

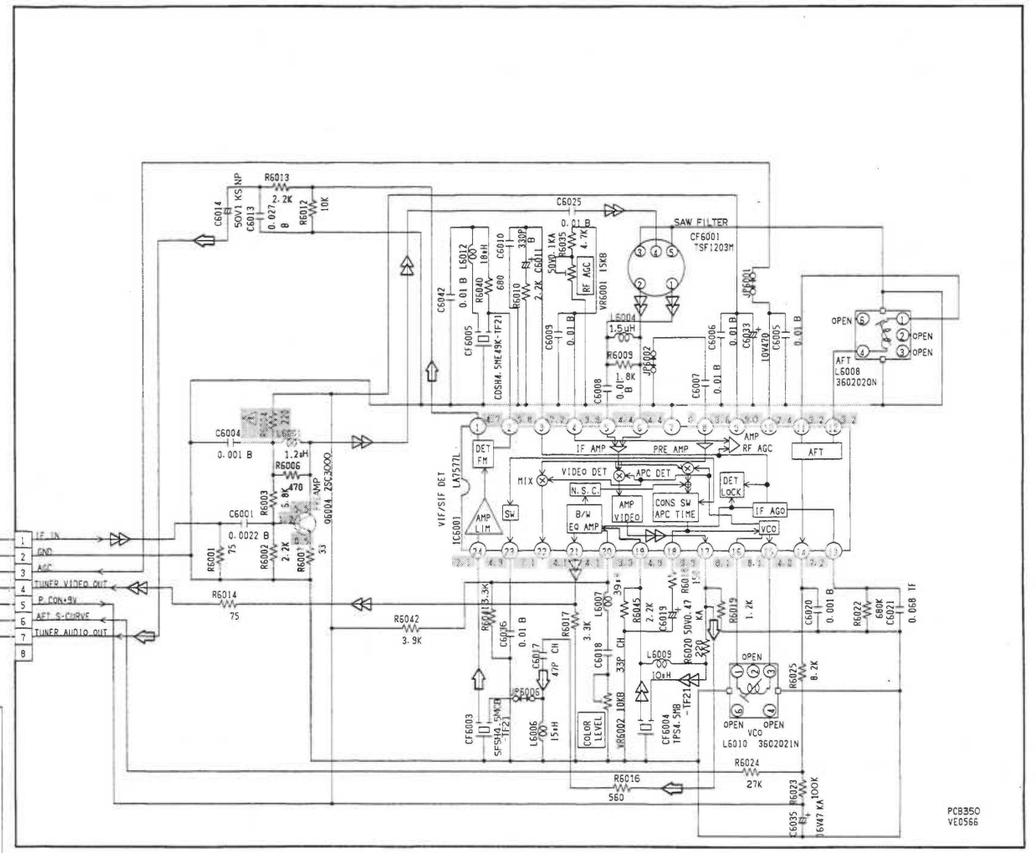
NOTE: THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

VCR TUNER/IF SCHEMATIC DIAGRAM

(MAIN PCB)



(IF PCB)



◁ VIF/TUNER VIDEO SIGNAL
◁ AUDIO SIGNAL(REC)

PCB010 VM4072

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

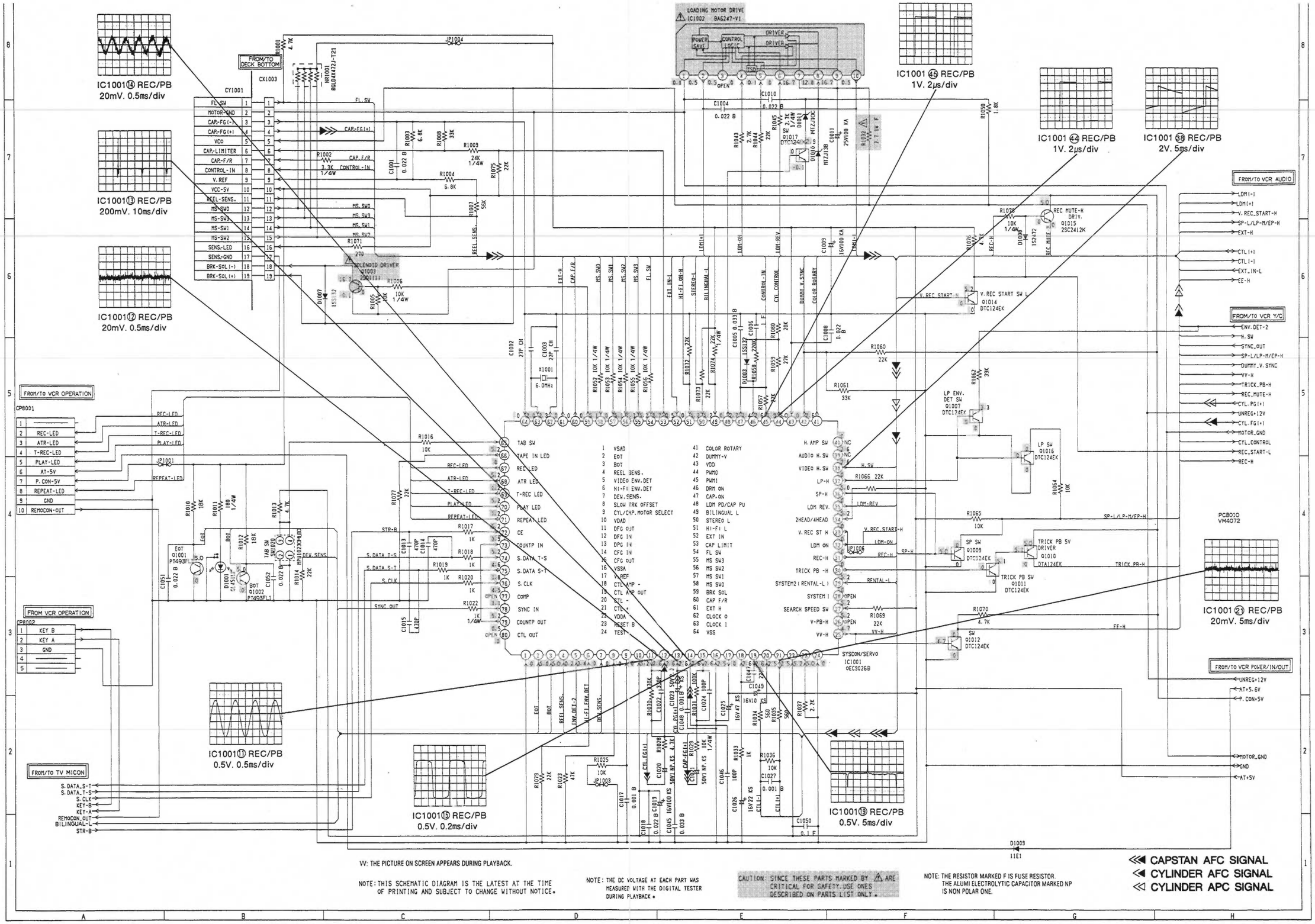
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

VCR SYSTEM CONTROL/SERVO SCHEMATIC DIAGRAM

(MAIN PCB)



VV: THE PICTURE ON SCREEN APPEARS DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

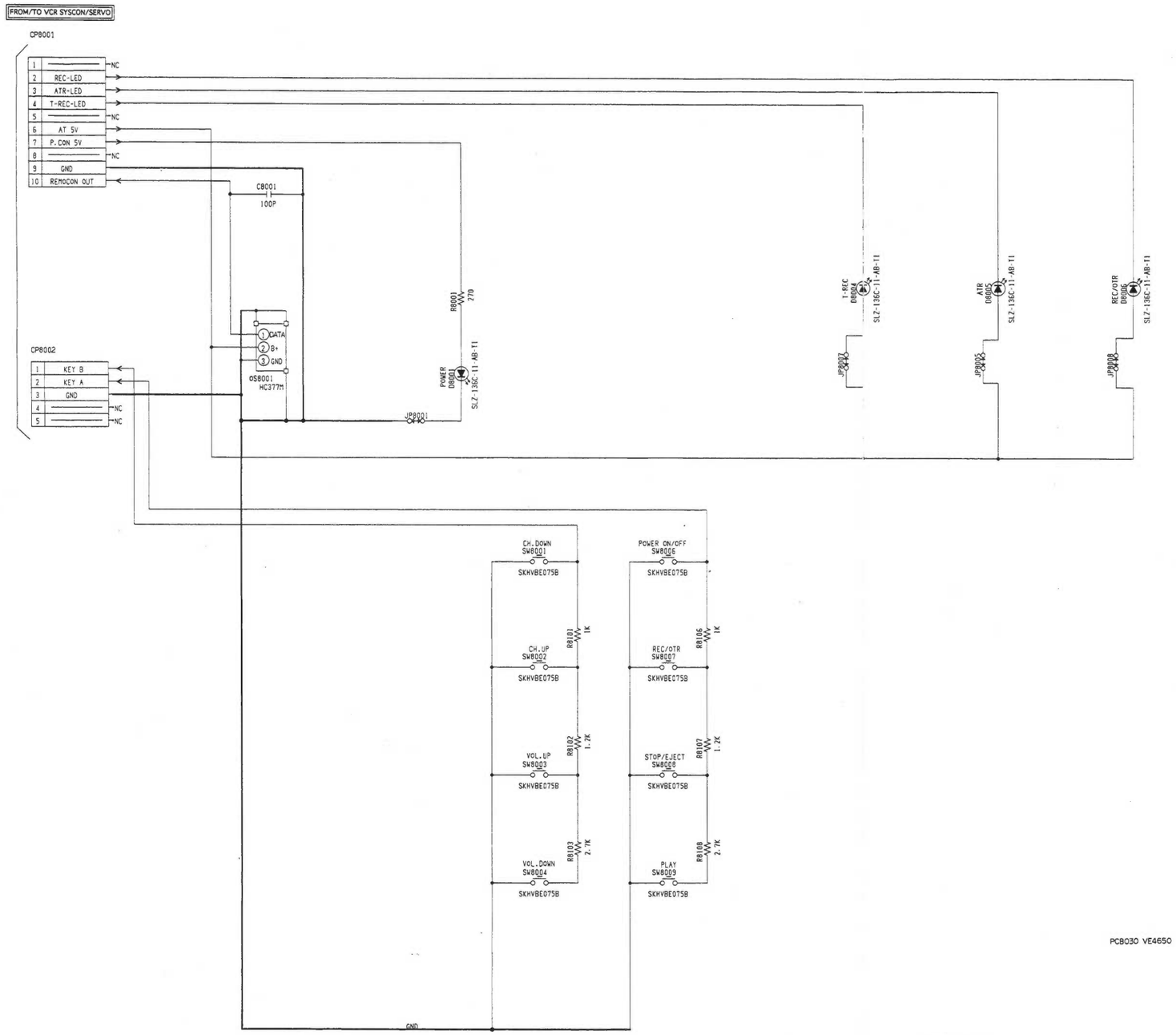
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED ON PARTS LIST ONLY.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

VCR OPERATION SCHEMATIC DIAGRAM

(OPERATION PCB)

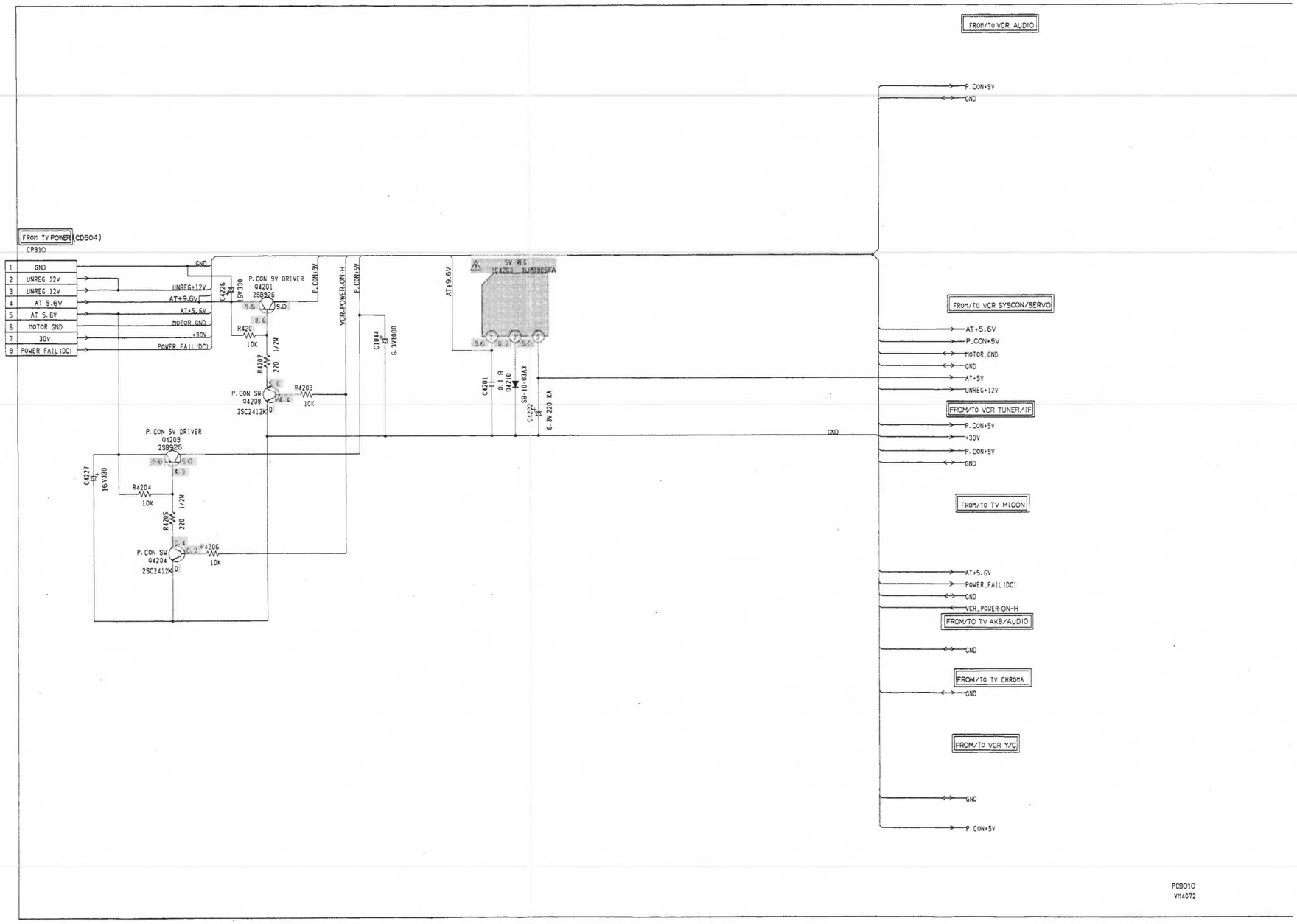


PCB030 VE4650

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

VCR POWER/IN/OUT SCHEMATIC DIAGRAM

(MAIN PCB)

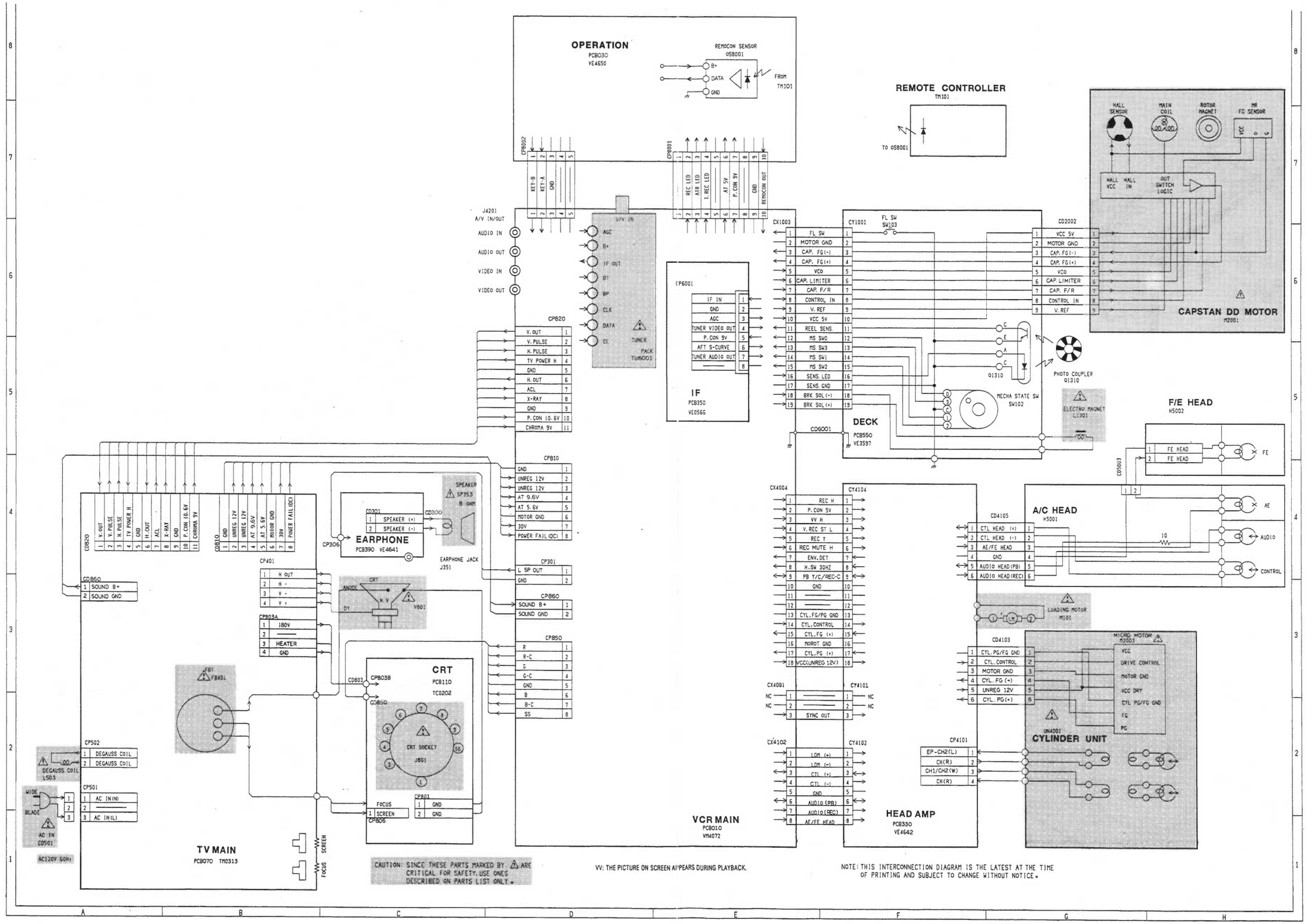


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

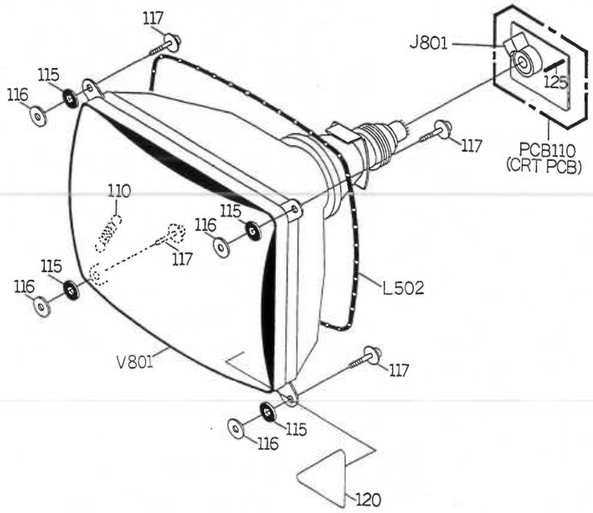
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

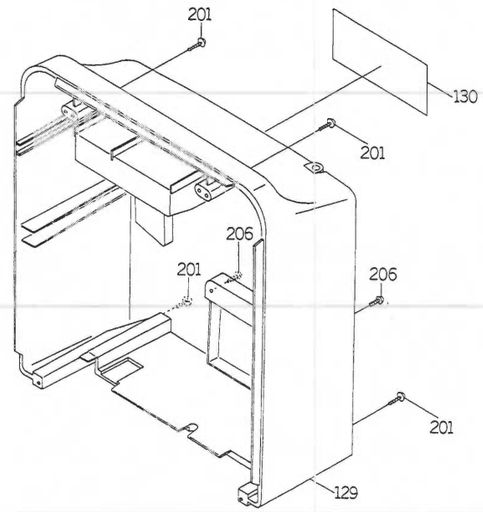
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

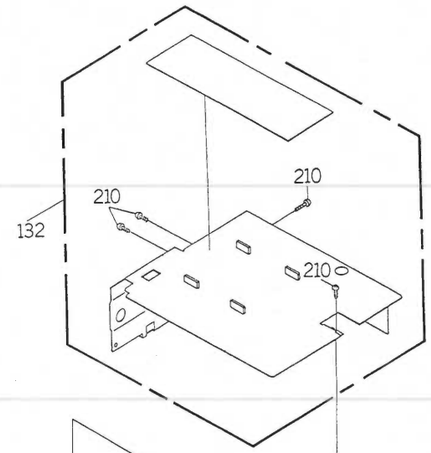
INTERCONNECTION DIAGRAM

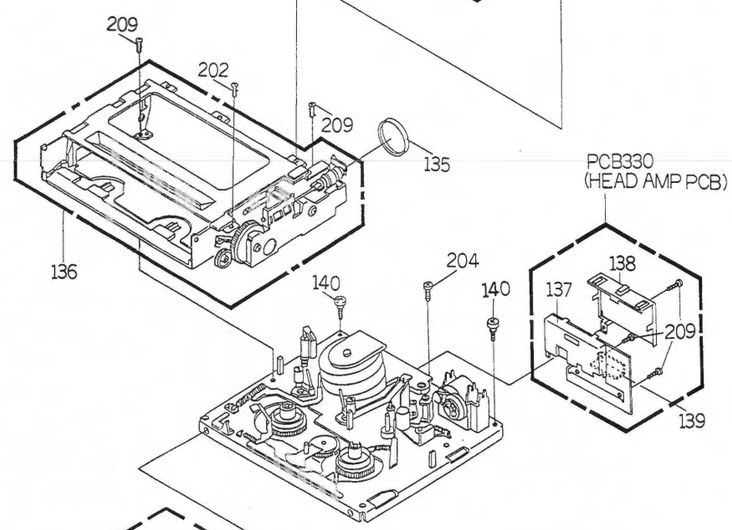


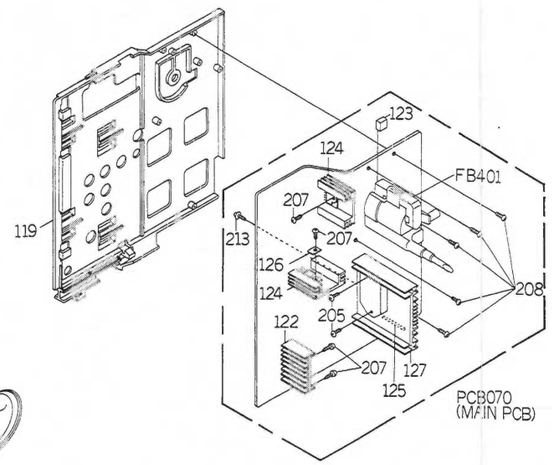
MECHANICAL EXPLODED VIEW

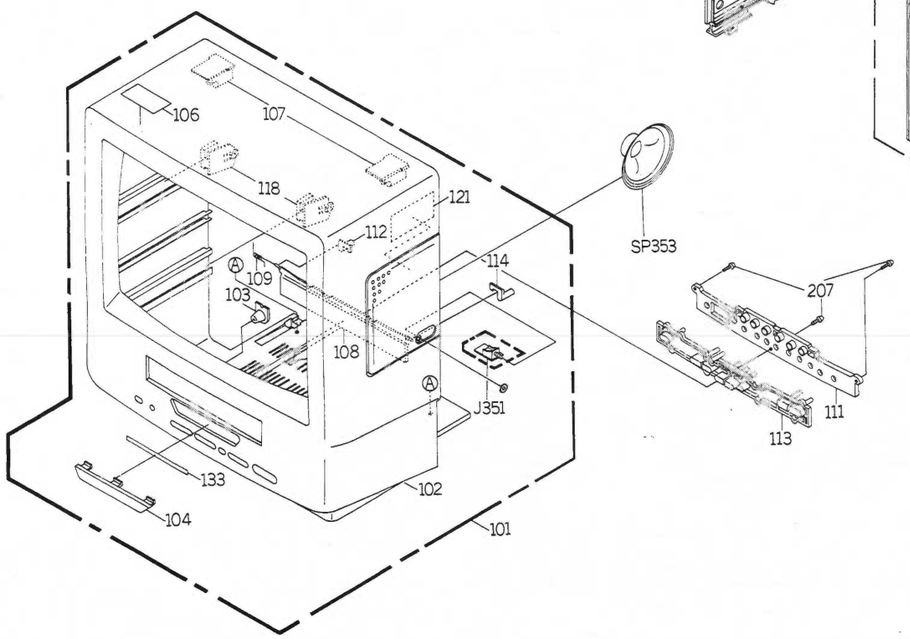


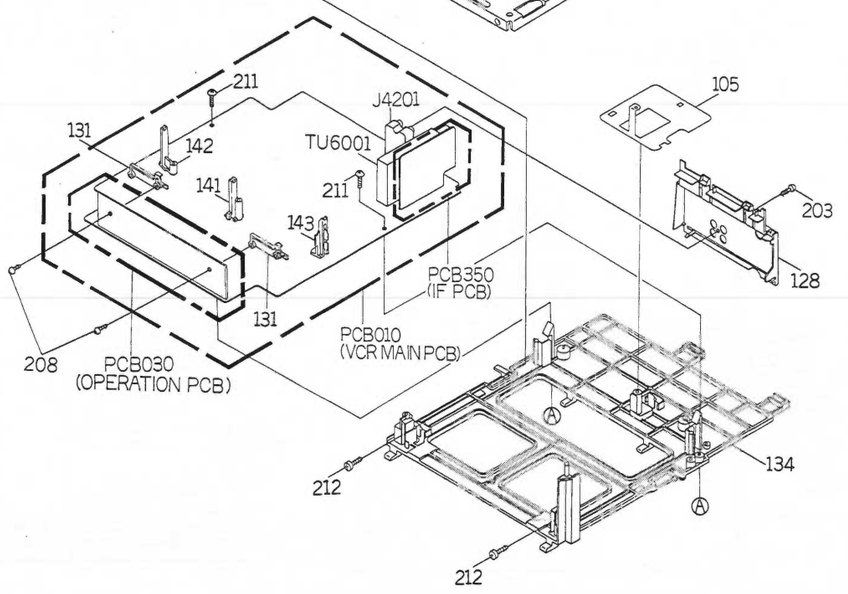












SEMICONDUCTOR BASE CONNECTIONS

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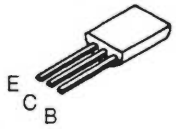
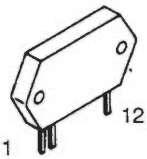
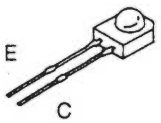
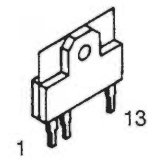
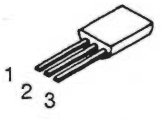
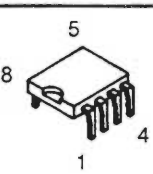
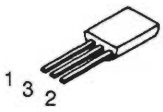
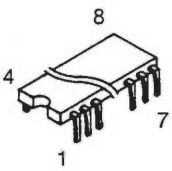
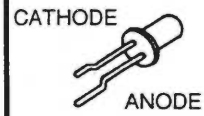
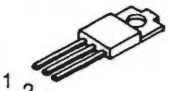
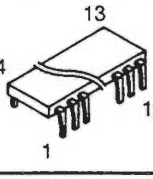
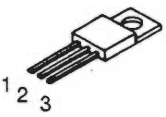
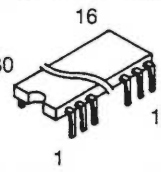
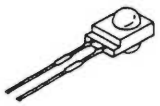
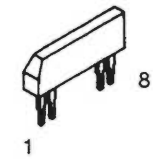
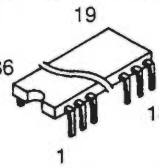
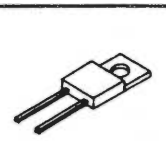
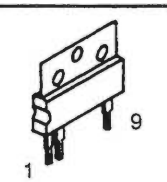
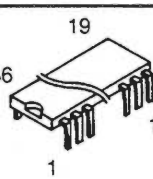
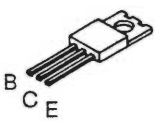
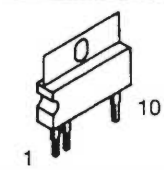
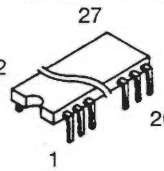
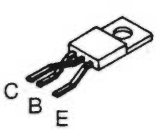
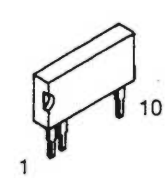
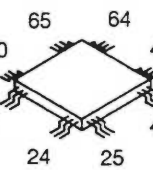
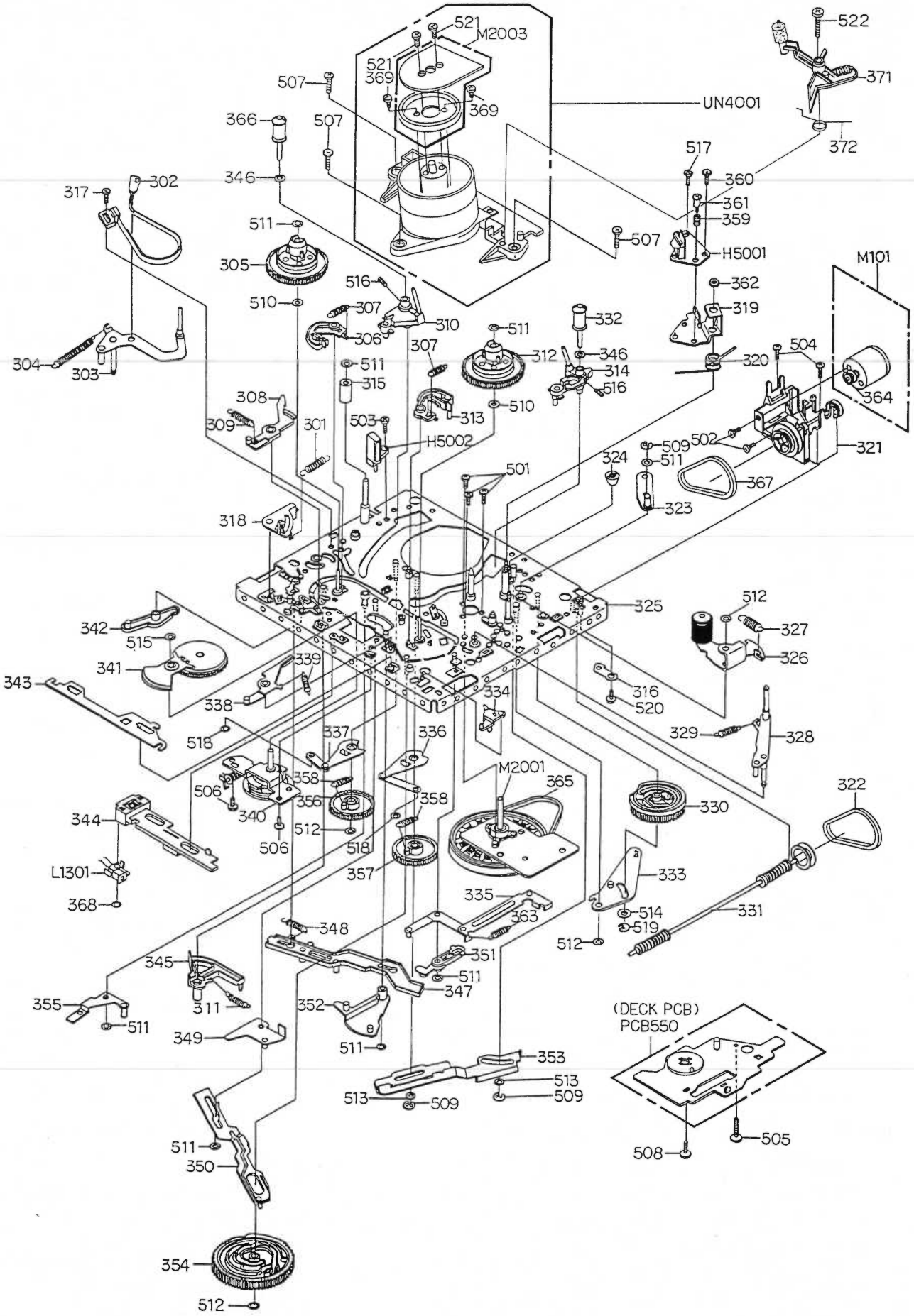
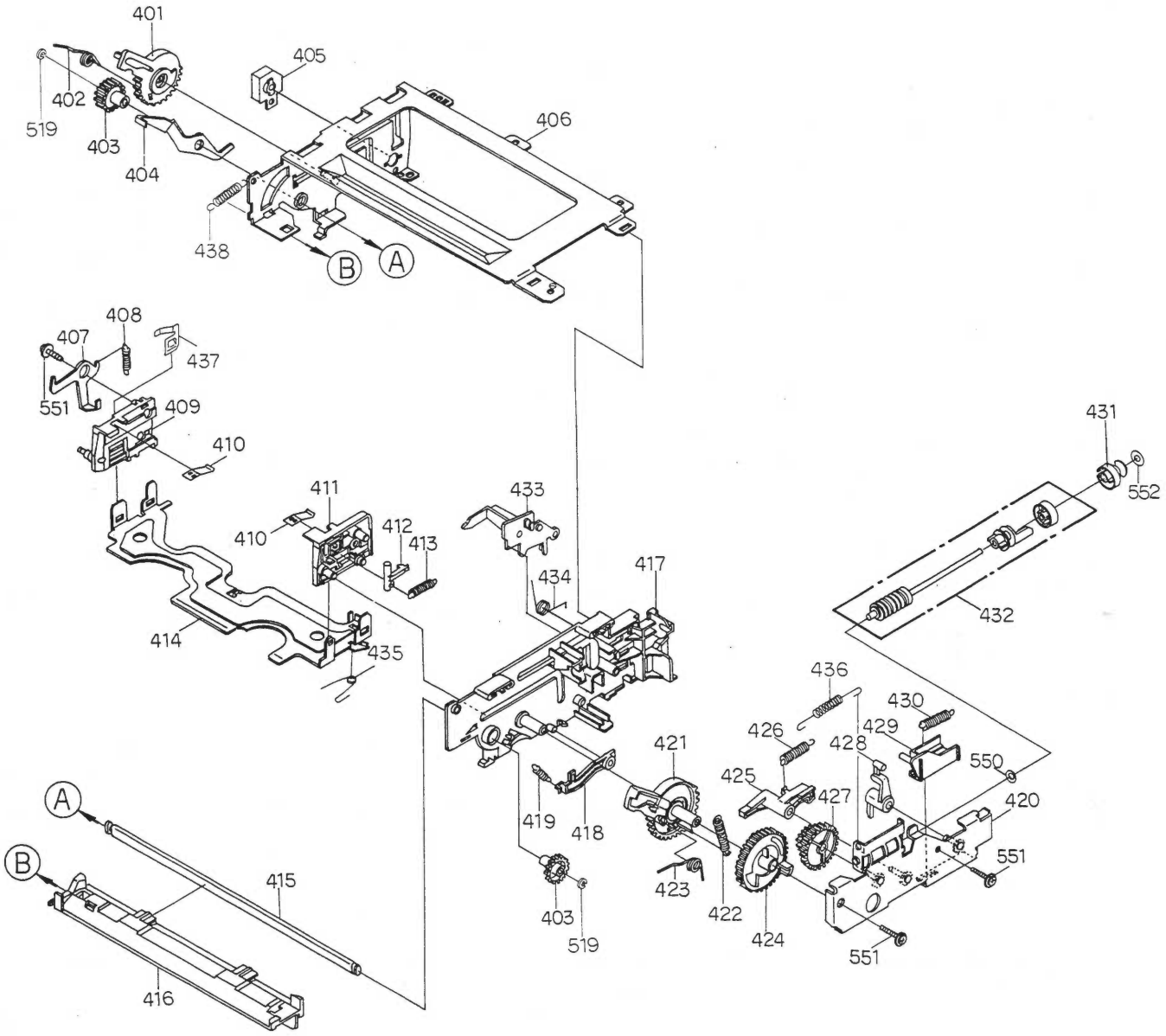
	RD7.5EB RD11EB RD12EB RD20EB RD27EB RD30EB 1S2472 RB721Q		2SA952 2SA1371 2SA1624 2SB926 2SC1317 2SC2271 2SC2909 2SC3000 2SC3468 2SD734 2SD1111		STK730-010
	1SS132 HZS6R8JB2 HZS13JB2 MTZJ5.1B MTZJ5.6B MTZJ10C MTZJ12B MTZJ13B		PT493FL1		LA7837
	11E1TA1 11E2TA1 11ES1TA1 21DQ04FE5R RM11C		NJM7805FA		XL24C01AP
	SB10-03A3 10ELS6TA1 11EQS04TA1 10ELS2TA1		PST600H		LC89960
	SLZ-136C		UPC78M10		LA7577L LA7286 LA7410
	15DF6		L7805V AN7809F		TA8782N
	GL451L1		LA7016		TA8801AN
	F5KF20		AN5265		LA7420
	2SC4160		BA6247		OEC7016B
	2SD2089		LA7210		OEC9026B

CHASSIS EXPLODED VIEW



FRONT LOADING EXPLODED VIEW



ELECTRICAL REPLACEMENT PARTS LIST

THIS ELECTRICAL PARTS LIST IS A STANDARD PARTS LIST, BUT INTERCHANGEABLE PARTS MAY BE USED IN THE UNIT. SEE THE INTERCHANGEABLE PARTS LIST AFTER THE STANDARD PARTS LIST.

REF.NO.	PART NO.	DESCRIPTION
	RESISTORS	
R102	R903N8104J	RC 100K OHM 1/8W
R103	R903N8103J	RC 10K OHM 1/8W
R104	R902N8102J	RC 1K OHM 1/8W
R105	R902N8272J	RC 2.7K OHM 1/8W
R106	R903N8104J	RC 100K OHM 1/8W
R107	R903N8472J	RC 4.7K OHM 1/8W
R108	R4X5T6123F	R.METAL 12K OHM 1/6W
R109	R4X5T6822F	R.METAL 8.2K OHM 1/6W
R110	R903N8154J	RC 150K OHM 1/8W
R111	R903N8273J	RC 27K OHM 1/8W
R113	R903N8103J	RC 10K OHM 1/8W
R114	R902N8223J	RC 22K OHM 1/8W
R115	R903N8472J	RC 4.7K OHM 1/8W
R116	R902N8102J	RC 1K OHM 1/8W
R117	R902N8472J	RC 4.7K OHM 1/8W
R118	R902N8102J	RC 1K OHM 1/8W
R120	R801R7103J	RC 10K OHM 1/10W
R121	R802R8223J	RC 22K OHM 1/8W
R122	R801R7103J	RC 10K OHM 1/10W
R123	R903N8102J	RC 1K OHM 1/8W
R124	R903N8153J	RC 15K OHM 1/8W
R125	R903N8471J	RC 470 OHM 1/8W
R126	R903N8105J	RC 1M OHM 1/8W
R128	R903N8472J	RC 4.7K OHM 1/8W
R129	R903N8472J	RC 4.7K OHM 1/8W
R130	R801R7682J	RC 6.8K OHM 1/10W
R132	R903N8103J	RC 10K OHM 1/8W
R133	R903N8123J	RC 12K OHM 1/8W
R134	R801R7822J	RC 8.2K OHM 1/10W
R135	R801R7561J	RC 560 OHM 1/10W
R137	R903N8183J	RC 18K OHM 1/8W
R138	R903N8124J	RC 120K OHM 1/8W
R141	R903N8472J	RC 4.7K OHM 1/8W
R142	R903N8102J	RC 1K OHM 1/8W
R143	R903N8102J	RC 1K OHM 1/8W
R144	R902N8102J	RC 1K OHM 1/8W
R145	R902N8682J	RC 6.8K OHM 1/8W
R146	R903N8222J	RC 2.2K OHM 1/8W
R147	R801R7332J	RC 3.3K OHM 1/10W
R148	R001T4752J	RC 7.5K OHM 1/4W
R149	R4X5T4472F	R.METAL 4.7K OHM 1/4W
R150	R4X5T6272F	R.METAL 2.7K OHM 1/6W
R151	R903N8562J	RC 5.6K OHM 1/8W
R152	R801R7163J	RC 16K OHM 1/10W
R153	R903N8223J	RC 22K OHM 1/8W
R154	R903N8223J	RC 22K OHM 1/8W
R155	R903N8103J	RC 10K OHM 1/8W
R156	R903N8103J	RC 10K OHM 1/8W
R157	R903N8103J	RC 10K OHM 1/8W
R160	R903N8103J	RC 10K OHM 1/8W
R161	R902N8562J	RC 5.6K OHM 1/8W
R162	R902N8562J	RC 5.6K OHM 1/8W
R163	R001T4103J	RC 10K OHM 1/4W
R164	R903N8682J	RC 6.8K OHM 1/8W
R165	R001T4513J	RC 51K OHM 1/4W
R166	R801R7274J	RC 270K OHM 1/10W
R167	R001T4682J	RC 6.8K OHM 1/4W
R168	R903N8562J	RC 5.6K OHM 1/8W
R169	R903N8562J	RC 5.6K OHM 1/8W
R170	R902N8562J	RC 5.6K OHM 1/8W
R175	R001T4102J	RC 1.0K OHM 1/4W
R176	R903N8102J	RC 1K OHM 1/8W
R177	R001T4102J	RC 1.0K OHM 1/4W
R178	R903N8102J	RC 1K OHM 1/8W
R182	R802R8103J	RC 10K OHM 1/8W
R183	R902N8103J	RC 10K OHM 1/8W
R197	R903N8183J	RC 18K OHM 1/8W
R201	R801R7181J	RC 180 OHM 1/10W
R202	R801R7102J	RC 1K OHM 1/10W
R204	R902N8102J	RC 1K OHM 1/8W
R205	R903N8102J	RC 1K OHM 1/8W
R206	R903N8472J	RC 4.7K OHM 1/8W
R210	R001T6101J	RC 100 OHM 1/6W
R211	R001T6101J	RC 100 OHM 1/6W
R212	R801R7101J	RC 100 OHM 1/10W
R370	R002T2680J	RC 68 OHM 1/2W
R377	R903N8102J	RC 1K OHM 1/8W
R378	R902N8392J	RC 3.9K OHM 1/8W
R379	R903N8103J	RC 10K OHM 1/8W
R380	R903N8392J	RC 3.9K OHM 1/8W
R381	R903N8102J	RC 1K OHM 1/8W

REF.NO.	PART NO.	DESCRIPTION
	RESISTORS (CONT.)	
R382	R903N8391J	RC 390 OHM 1/8W
R383	R903N8102J	RC 1K OHM 1/8W
R384	R903N8122J	RC 1.2K OHM 1/8W
R385	R002T2101J	RC 100 OHM 1/2W
R386	R903N8561J	RC 560 OHM 1/8W
R387	R902N8103J	RC 10K OHM 1/8W
⚠ R388	R002T24R7J	RC 4.7 OHM 1/2W
R407	R001T6331J	RC 330 OHM 1/6W
⚠ R423	R615U4470J	R.FUSE 47 OHM 1/4W
R424	R001T6102J	RC 1.0K OHM 1/6W
R425	R001T6683J	RC 68K OHM 1/6W
R426	R001T4823J	RC 82K OHM 1/4W
⚠ R427	R426T21R5F	R.METAL 1.5 OHM 1/2W
R428	R001T6102J	RC 1.0K OHM 1/6W
R429	R001T6473J	RC 47K OHM 1/6W
R430	R001T6222J	RC 2.2K OHM 1/6W
R431	R001T6162J	RC 1.6K OHM 1/6W
R432	R001T6683J	RC 68K OHM 1/6W
R433	R4X5T4394F	R.METAL 390K OHM 1/4W
R434	R002T2271J	RC 270 OHM 1/2W
R435	R002T2681J	RC 680 OHM 1/2W
R436	R002T2681J	RC 680 OHM 1/2W
R437	R002T2122J	RC 1.2K OHM 1/2W
R438	R002T2102J	RC 1.0K OHM 1/2W
⚠ R439	R4X5T4273F	R.METAL 27K OHM 1/4W
⚠ R440	R4X5T4153F	R.METAL 15K OHM 1/4W
⚠ R441	R4X5T4104F	R.METAL 100K OHM 1/4W
⚠ R442	R4X5T4183F	R.METAL 18K OHM 1/4W
⚠ R444	R4X5T4273F	R.METAL 27K OHM 1/4W
⚠ R445	R3X28B182J	R.METAL OXIDE 1.8K OHM 3 W
⚠ R446	R3X28B102J	R.METAL OXIDE 1.0K OHM 3 W
⚠ R447	R61582680J	R.FUSE 68 OHM 1/2W
⚠ R449	R5Y2CE5R6J	R.CEMENT 5.6 OHM 7 W
⚠ R450	R635812R2J	R.FUSE 2.2 OHM 1 W
⚠ R451	R615812R2J	R.FUSE 2.2 OHM 1 W
⚠ R452	R635811R8J	R.FUSE 1.8 OHM 1 W
R453	R001T4124J	RC 120K OHM 1/4W
R455	R002T2150J	RC 15 OHM 1/2W
R456	R002T2472J	RC 4.7K OHM 1/2W
⚠ R500	R011K2275J	RC 2.7M OHM 1/2W
⚠ R501	R5Y2CE2R2J	R.CEMENT 2.2 OHM 7 W
R502	R001T4105J	RC 1.0M OHM 1/4W
R503	R001T4754G	RC 750K OHM 1/4W
R504	R3X28B330J	R.METAL OXIDE 33 OHM 3 W
R505	R3X181101J	R.METAL OXIDE 100 OHM 1 W
⚠ R506	R635U4102J	R.FUSE 1K OHM 1/4W
R507	R001T4473J	RC 47K OHM 1/4W
R508	R3U28BR47J	R.METAL OXIDE 0.47 OHM 3 W
R509	R001T4273J	RC 27K OHM 1/4W
R510	R001T6224J	RC 220K OHM 1/6W
⚠ R511	R6158A100J	R.FUSE 10 OHM 2 W
R512	R3X181822J	R.METAL OXIDE 8.2K OHM 1 W
R513	R3X28A150J	R.METAL OXIDE 15 OHM 2 W
R518	R001T4103J	RC 10K OHM 1/4W
R519	R001T6104J	RC 100K OHM 1/6W
R520	R001T6103J	RC 10K OHM 1/6W
R521	R001T6103J	RC 10K OHM 1/6W
R522	R001T6103J	RC 10K OHM 1/6W
R523	R001T6103J	RC 10K OHM 1/6W
R535	R001T6472J	RC 4.7K OHM 1/6W
R536	R001T6123J	RC 12K OHM 1/6W
R601	R801R7103J	RC 10K OHM 1/10W
R602	R903N8102J	RC 1K OHM 1/8W
R603	R903N8224J	RC 220K OHM 1/8W
R604	R903N8223J	RC 22K OHM 1/8W
R605	R001T6273J	RC 27K OHM 1/6W
R606	R001T6751J	RC 750 OHM 1/6W
R607	R903N8102J	RC 1K OHM 1/8W
R608	R903N8102J	RC 1K OHM 1/8W
R609	R903N8622J	RC 6.2K OHM 1/8W
R612	R903N8102J	RC 1K OHM 1/8W
R613	R903N8102J	RC 1K OHM 1/8W
R614	R903N8472J	RC 4.7K OHM 1/8W
R615	R903N8102J	RC 1K OHM 1/8W
⚠ R616	R3X181273J	R.METAL OXIDE 27K OHM 1 W
R617	R001T4431J	RC 430 OHM 1/4W
R644	R801R7155J	RC 1.5M OHM 1/10W
R648	R903N8224J	RC 220K OHM 1/8W
R651	R903N8223J	RC 22K OHM 1/8W
R652	R903N8103J	RC 10K OHM 1/8W
R653	R902N8183J	RC 18K OHM 1/8W
R654	R903N8562J	RC 5.6K OHM 1/8W
R655	R001T6391J	RC 390 OHM 1/6W
R656	R902N8471J	RC 470 OHM 1/8W

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
	RESISTORS (CONT.)	
R658	R001T4103J	RC 10K OHM 1/4W
R659	R902N8472J	RC 4.7K OHM 1/8W
R660	R903N8102J	RC 1K OHM 1/8W
R661	R903N8472J	RC 4.7K OHM 1/8W
R662	R001T4473J	RC 47K OHM 1/4W
R663	R001T4101J	RC 100 OHM 1/4W
R664	R903N8472J	RC 4.7K OHM 1/8W
R665	R903N8391J	RC 390 OHM 1/8W
R666	R002T2472J	RC 4.7K OHM 1/2W
R671	R903N8102J	RC 1K OHM 1/8W
R801	R002T2105J	RC 1M OHM 1/2W
⚠ R802	R3X18A103J	R.METAL OXIDE 10K OHM 2 W
R803	R002T2272J	RC 2.7K OHM 1/2W
R804	R001T6133G	RC 13K OHM 1/6W
⚠ R805	R3X18A103J	R.METAL OXIDE 10K OHM 2 W
R806	R002T2272J	RC 2.7K OHM 1/2W
R807	R001T6133G	RC 13K OHM 1/6W
R808	R001T6133G	RC 13K OHM 1/6W
R809	R002T2272J	RC 2.7K OHM 1/2W
⚠ R810	R3X18A103J	R.METAL OXIDE 10K OHM 2 W
R811	R001T6332J	RC 3.3K OHM 1/6W
R812	R001T6332J	RC 3.3K OHM 1/6W
R813	R001T6332J	RC 3.3K OHM 1/6W
R814	R001T6151G	RC 150 OHM 1/6W
R815	R001T6151G	RC 150 OHM 1/6W
R816	R001T6151G	RC 150 OHM 1/6W
R817	R001T6472G	RC 4.7K OHM 1/6W
R818	R001T6242G	RC 2.4K OHM 1/6W
R819	R001T6432G	RC 4.3K OHM 1/6W
R901	R903N8682J	RC 6.8K OHM 1/8W
R902	R903N8682J	RC 6.8K OHM 1/8W
R903	R903N8682J	RC 6.8K OHM 1/8W
R904	R903N8152J	RC 1.5K OHM 1/8W
⚠ R906	R61584270J	R.FUSE 27 OHM 1/4W
R907	R903N8102J	RC 1K OHM 1/8W
R908	R001T6562J	RC 5.6K OHM 1/6W
R909	R002T2122J	RC 1.2K OHM 1/2W
R910	R903N8222J	RC 2.2K OHM 1/8W
R911	R903N8222J	RC 2.2K OHM 1/8W
R912	R001T6222J	RC 2.2K OHM 1/6W
R913	R001T6470J	RC 47 OHM 1/6W
R914	R903N8470J	RC 47 OHM 1/8W
R915	R903N8470J	RC 47 OHM 1/8W
R916	R001T4102J	RC 1.0K OHM 1/4W
R917	R001T4102J	RC 1.0K OHM 1/4W
R918	R001T4102J	RC 1.0K OHM 1/4W
⚠ R919	R61584120J	R.FUSE 12 OHM 1/4W
R920	R902N8332J	RC 3.3K OHM 1/8W
R921	R801R7102J	RC 1K OHM 1/10W
R922	R801R7102J	RC 1K OHM 1/10W
R923	R801R7102J	RC 1K OHM 1/10W
R1001	R001T6472J	RC 4.7K OHM 1/6W
R1002	R001T4332J	RC 3.3K OHM 1/4W
R1003	R903N8682J	RC 6.8K OHM 1/8W
R1004	R903N8682J	RC 6.8K OHM 1/8W
R1005	R902N8103J	RC 10K OHM 1/8W
R1006	R001T4103J	RC 10K OHM 1/4W
R1007	R903N8563J	RC 56K OHM 1/8W
R1008	R903N8333J	RC 33K OHM 1/8W
R1009	R001T4243J	RC 24K OHM 1/4W
R1010	R903N8183J	RC 18K OHM 1/8W
R1011	R0X1X4181J	RC 180 OHM 1/4W
R1012	R902N8183J	RC 18K OHM 1/8W
R1013	R903N8472J	RC 4.7K OHM 1/8W
R1014	R903N8223J	RC 22K OHM 1/8W
R1016	R001T6103J	RC 10K OHM 1/6W
R1017	R902N8102J	RC 1K OHM 1/8W
R1018	R902N8102J	RC 1K OHM 1/8W
R1019	R902N8102J	RC 1K OHM 1/8W
R1020	R902N8102J	RC 1K OHM 1/8W
R1022	R001T4102J	RC 1.0K OHM 1/4W
R1023	R903N8473J	RC 47K OHM 1/8W
R1025	R903N8103J	RC 10K OHM 1/8W
R1028	R903N8472J	RC 4.7K OHM 1/8W
R1029	R001T4103J	RC 10K OHM 1/4W
R1030	R903N8474J	RC 470K OHM 1/8W
R1031	R903N8104J	RC 100K OHM 1/8W
⚠ R1032	R615812R7J	R.FUSE 2.7 OHM 1 W
R1033	R903N8102J	RC 1K OHM 1/8W
R1034	R903N8561J	RC 560 OHM 1/8W
R1035	R903N8561J	RC 560 OHM 1/8W
R1036	R903N8103J	RC 10K OHM 1/8W
R1037	R801R7222J	RC 2.2K OHM 1/10W
R1043	R001T6272J	RC 2.7K OHM 1/6W

REF.NO.	PART NO.	DESCRIPTION
	RESISTORS (CONT.)	
R1044	R902N8223J	RC 22K OHM 1/8W
R1045	R001T4272J	RC 2.7K OHM 1/4W
R1050	R903N8182J	RC 1.8K OHM 1/8W
R1052	R001T4103J	RC 10K OHM 1/4W
R1053	R001T4103J	RC 10K OHM 1/4W
R1054	R001T4103J	RC 10K OHM 1/4W
R1055	R001T4103J	RC 10K OHM 1/4W
R1056	R001T4103J	RC 10K OHM 1/4W
R1057	R903N8223J	RC 22K OHM 1/8W
R1058	R903N8224J	RC 220K OHM 1/8W
R1059	R903N8273J	RC 27K OHM 1/8W
R1060	R902N8223J	RC 22K OHM 1/8W
R1061	R903N8333J	RC 33K OHM 1/8W
R1062	R801R7393J	RC 39K OHM 1/10W
R1064	R801R7103J	RC 10K OHM 1/10W
R1065	R903N8103J	RC 10K OHM 1/8W
R1066	R902N8223J	RC 22K OHM 1/8W
R1069	R001T6223J	RC 22K OHM 1/6W
R1070	R903N8472J	RC 4.7K OHM 1/8W
R1071	R001T6271J	RC 270 OHM 1/6W
R1072	R902N8223J	RC 22K OHM 1/8W
R1073	R001T6223J	RC 22K OHM 1/6W
R1074	R001T4223J	RC 22K OHM 1/4W
R1075	R001T6223J	RC 22K OHM 1/6W
R1076	R903N8472J	RC 4.7K OHM 1/8W
R1077	R001T6223J	RC 22K OHM 1/6W
R1078	R001T4103J	RC 10K OHM 1/4W
R1079	R903N8223J	RC 22K OHM 1/8W
R1080	R903N8203J	RC 20K OHM 1/8W
R4001	R903N8222J	RC 2.2K OHM 1/8W
R4002	R903N8102J	RC 1K OHM 1/8W
R4003	R903N8432J	RC 4.3K OHM 1/8W
R4004	R903N8122J	RC 1.2K OHM 1/8W
R4005	R903N8272J	RC 2.7K OHM 1/8W
R4006	R903N8681J	RC 680 OHM 1/8W
R4010	R903N8822J	RC 8.2K OHM 1/8W
R4011	R001T4182J	RC 1.8K OHM 1/4W
R4012	R902N8222J	RC 2.2K OHM 1/8W
R4013	R903N8182J	RC 1.8K OHM 1/8W
R4014	R903N8222J	RC 2.2K OHM 1/8W
R4016	R902N8103J	RC 10K OHM 1/8W
R4017	R903N8472J	RC 4.7K OHM 1/8W
R4018	R903N8122J	RC 1.2K OHM 1/8W
R4019	R903N8102J	RC 1K OHM 1/8W
R4021	R903N8561J	RC 560 OHM 1/8W
R4022	R902N8271J	RC 270 OHM 1/8W
R4023	R903N8182J	RC 1.8K OHM 1/8W
R4024	R903N8391J	RC 390 OHM 1/8W
R4025	R903N8122J	RC 1.2K OHM 1/8W
R4026	R903N8152J	RC 1.5K OHM 1/8W
R4027	R903N8471J	RC 470 OHM 1/8W
R4028	R903N8105J	RC 1M OHM 1/8W
R4029	R903N8471J	RC 470 OHM 1/8W
R4030	R903N8181J	RC 180 OHM 1/8W
R4031	R903N8102J	RC 1K OHM 1/8W
R4033	R903N8102J	RC 1K OHM 1/8W
R4034	R001T6102J	RC 1.0K OHM 1/6W
R4035	R903N8823J	RC 82K OHM 1/8W
R4036	R903N8102J	RC 1K OHM 1/8W
R4049	R001T4102J	RC 1.0K OHM 1/4W
R4056	R902N8222J	RC 2.2K OHM 1/8W
R4057	R903N8101J	RC 100 OHM 1/8W
R4061	R903N8101J	RC 100 OHM 1/8W
R4062	R001T6330J	RC 33 OHM 1/6W
R4064	R002T4221J	RC 220 OHM 1/4W
R4065	R002T4680J	RC 68 OHM 1/4W
R4068	R902N8103J	RC 10K OHM 1/8W
R4069	R902N8221J	RC 220 OHM 1/8W
R4070	R801R7122J	RC 1.2K OHM 1/10W
R4071	R801R7102J	RC 1K OHM 1/10W
R4072	R801R7822J	RC 8.2K OHM 1/10W
R4073	R903N8102J	RC 1K OHM 1/8W
R4075	R903N8683J	RC 68K OHM 1/8W
R4076	R903N8102J	RC 1K OHM 1/8W
R4077	R802R8152J	RC 1.5K OHM 1/8W
R4085	R903N8392J	RC 3.9K OHM 1/8W
R4086	R001T6222J	RC 2.2K OHM 1/6W
R4088	R903N8123J	RC 12K OHM 1/8W
R4098	R903N8103J	RC 10K OHM 1/8W
R4101	R801R7563J	RC 56K OHM 1/10W
R4102	R801R7682J	RC 6.8K OHM 1/10W
R4103	R801R7223J	RC 22K OHM 1/10W
R4104	R801R7222J	RC 2.2K OHM 1/10W
R4105	R802R8472J	RC 4.7K OHM 1/8W

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
	RESISTORS (CONT.)	
R4107	R801R7103J	RC 10K OHM 1/10W
R4108	R801R7682J	RC 6.8K OHM 1/10W
R4109	R801R7152J	RC 1.5K OHM 1/10W
R4111	R801R7203J	RC 20K OHM 1/10W
R4113	R801R7331J	RC 330 OHM 1/10W
R4114	R802R8102J	RC 1K OHM 1/8W
R4115	R802R8331J	RC 330 OHM 1/8W
R4201	R903N8103J	RC 10K OHM 1/8W
R4202	R002T2221J	RC 220 OHM 1/2W
R4203	R903N8103J	RC 10K OHM 1/8W
R4204	R903N8103J	RC 10K OHM 1/8W
R4205	R002T2221J	RC 220 OHM 1/2W
R4206	R902N8103J	RC 10K OHM 1/8W
R4210	R002T4221J	RC 220 OHM 1/4W
R4211	R002T4472J	RC 4.7K OHM 1/4W
R4213	R002T4750J	RC 75 OHM 1/4W
R4215	R801R7333J	RC 33K OHM 1/10W
R4216	R801R7473J	RC 47K OHM 1/10W
R4218	R801R7822J	RC 8.2K OHM 1/10W
R4219	R801R7102J	RC 1K OHM 1/10W
R4220	R801R7123J	RC 12K OHM 1/10W
R4221	R002T4750J	RC 75 OHM 1/4W
R4239	R002T4750J	RC 75 OHM 1/4W
R5001	R903N8392J	RC 3.9K OHM 1/8W
R5002	R903N8182J	RC 1.8K OHM 1/8W
R5003	R903N8681J	RC 680 OHM 1/8W
R5004	R903N8222J	RC 2.2K OHM 1/8W
R5005	R903N8273J	RC 27K OHM 1/8W
R5006	R4X5T6182F	R.METAL 1.8K OHM 1/6W
R5008	R902N8561J	RC 560 OHM 1/8W
R5009	R903N8473J	RC 47K OHM 1/8W
R5010	R801R7185J	RC 1.8M OHM 1/10W
R5011	R903N8183J	RC 18K OHM 1/8W
R5015	R903N8103J	RC 10K OHM 1/8W
R5016	R903N8334J	RC 330K OHM 1/8W
R5017	R903N8560J	RC 56 OHM 1/8W
R5018	R001T6470J	RC 47 OHM 1/6W
R5019	R902N8472J	RC 4.7K OHM 1/8W
R5020	R001T44R7J	RC 4.7 OHM 1/4W
R5023	R903N8122J	RC 1.2K OHM 1/8W
R5026	R903N8682J	RC 6.8K OHM 1/8W
R6001	R801R7750J	RC 75 OHM 1/10W
R6002	R801R7222J	RC 2.2K OHM 1/10W
R6003	R801R7682J	RC 6.8K OHM 1/10W
⚠ R6004	R001T6221J	RC 220 OHM 1/6W
R6005	R001T6273J	RC 27K OHM 1/6W
R6006	R801R7471J	RC 470 OHM 1/10W
R6007	R801R7330J	RC 33 OHM 1/10W
R6008	R902N8472J	RC 4.7K OHM 1/8W
R6009	R801R7182J	RC 1.8K OHM 1/10W
R6010	R801R7222J	RC 2.2K OHM 1/10W
R6012	R801R7103J	RC 10K OHM 1/10W
R6013	R802R8222J	RC 2.2K OHM 1/8W
R6014	R801R7750J	RC 75 OHM 1/10W
R6015	R001T6151J	RC 150 OHM 1/6W
R6016	R801R7561J	RC 560 OHM 1/10W
R6017	R801R7332J	RC 3.3K OHM 1/10W
R6018	R001T6151J	RC 150 OHM 1/6W
R6019	R801R7122J	RC 1.2K OHM 1/10W
R6020	R801R7221J	RC 220 OHM 1/10W
R6021	R903N8563J	RC 56K OHM 1/8W
R6022	R801R7684J	RC 680K OHM 1/10W
R6023	R801R7104J	RC 100K OHM 1/10W
R6024	R801R7273J	RC 27K OHM 1/10W
R6025	R802R8822J	RC 8.2K OHM 1/8W
R6033	R902N8103J	RC 10K OHM 1/8W
R6034	R903N8103J	RC 10K OHM 1/8W
R6035	R001T6472J	RC 4.7K OHM 1/6W
R6038	R903N8151J	RC 150 OHM 1/8W
R6040	R801R7681J	RC 680 OHM 1/10W
R6041	R801R7332J	RC 3.3K OHM 1/10W
R6042	R801R7392J	RC 3.9K OHM 1/10W
R6045	R801R7222J	RC 2.2K OHM 1/10W
R6501	R801R7332J	RC 3.3K OHM 1/10W
R6502	R903N8102J	RC 1K OHM 1/8W
R6505	R902N8153J	RC 15K OHM 1/8W
R6506	R903N8122J	RC 1.2K OHM 1/8W
R6507	R903N8102J	RC 1K OHM 1/8W
R6508	R001T6823J	RC 82K OHM 1/6W
R6509	R903N8823J	RC 82K OHM 1/8W
R6510	R902N8183J	RC 18K OHM 1/8W
R6511	R903N8331J	RC 330 OHM 1/8W
R6516	R801R7103J	RC 10K OHM 1/10W
R6517	R001T6152J	RC 1.5K OHM 1/6W

REF.NO.	PART NO.	DESCRIPTION
	RESISTORS (CONT.)	
R8001	R001T6271J	RC 270 OHM 1/6W
R8101	R001T6102J	RC 1.0K OHM 1/6W
R8102	R001T6122J	RC 1.2K OHM 1/6W
R8103	R001T6272J	RC 2.7K OHM 1/6W
R8106	R001T6102J	RC 1.0K OHM 1/6W
R8107	R001T6122J	RC 1.2K OHM 1/6W
R8108	R001T6272J	RC 2.7K OHM 1/6W
	CAPACITORS	
C102	CS0SSL4L2J	CC 330 PF 50V SL
C103	P6M3T0104J	CMPL 0.1 UF 50V TF
C104	CS0RSL4L2J	CC 330 PF 50V SL
C105	E50HT5R33M	CE 0.33 UF 50V
C107	CS0RB0414K	CC 0.01 UF 50V B
C108	CS0RSL422J	CC 200 PF 50V SL
C109	E50HT5010M	CE 1 UF 50V
C110	CS0RB0413K	CC 1000 PF 50V B
C111	CS0RF0415Z	CC 0.1 UF 50V F
C112	CS0RSL4S2J	CC 560 PF 50V SL
C113	CHGTF03H4Z	CC 0.022 UF 25V
C115	CS0RCH4H1J	CC 22 PF 50V CH
C116	CS0SB04H4K	CC 0.022 UF 50V B
C117	E55XTP473Z	CE 0.047 F 5.5V
C118	CS0SB0415K	CC 0.1 UF 50V B
C119	CS0SB0414K	CC 0.01 UF 50V B
C120	E00IT0471M	CE 470 UF 6.3V
C123	CS0SSL4V1J	CC 75 PF 50V SL
C124	CS0RSL4X1J	CC 91 PF 50V SL
C125	E024T3330M	CE 33 UF 25V
C126	E50HT54R7M	CE 4.7 UF 50V
C127	E024T54R7M	CE 4.7 UF 50V
C128	E50HT5R47M	CE 0.47 UF 50V
C129	E50HT54R7M	CE 4.7 UF 50V
C130	CS0RB0414K	CC 0.01 UF 50V B
C131	E50HT54R7M	CE 4.7 UF 50V
C132	E50HT54R7M	CE 4.7 UF 50V
C133	E50HT54R7M	CE 4.7 UF 50V
C134	CS0RB0414K	CC 0.01 UF 50V B
C141	CS0RB0413K	CC 1000 PF 50V B
C149	CS0RSL412J	CC 100 PF 50V SL
C150	CS0SSL412J	CC 100 PF 50V SL
C151	P232W0105J	CMPL 1.0 UF 50V
C374	CS0SB0413K	CC 1000 PF 50V B
C375	E50HT5010M	CE 1 UF 50V
C376	E50HT2100M	CE 10 UF 16V
C377	E50HT2100M	CE 10 UF 16V
C378	E50HT5010M	CE 1 UF 50V
C379	E50HT2100M	CE 10 UF 16V
C380	E50HT2100M	CE 10 UF 16V
C381	E02LT3471M	CE 470 UF 25V
C382	E00IT3471M	CE 470 UF 25V
C383	P1S3T0472J	CP 0.0047UF 50V
⚠ C408	E53ZT2101M	CE 100 UF 16V VZ
C409	P1S3T0103J	CP 0.01 UF 50V
C410	P6M3T0105J	CMPL 1.0 UF 50V
C411	E00IT5010M	CE 1 UF 50V
C412	E02LT3102M	CE 1000 UF 25V
C413	E02LT4101M	CE 100 UF 35V
C414	C0JTSL511F	CC 10 PF 500V SL
C415	P613T1224J	CMPL 0.22 UF 100V TF
C416	C0JTSL5H1J	CC 22 PF 500V SL
C417	C0JTB05S2K	CC 560 PF 500V YB
⚠ C418	E0E7TB010M	CE 1 UF 160V
⚠ C419	E02LT2102M	CE 1000 UF 16V
⚠ C420	E02LT3102M	CE 1000 UF 25V
⚠ C421	E0EL04102M	CE 1000 UF 35V
⚠ C422	E0E7TD010M	CE 1 UF 250V
C423	P441F2564J	CMPP 0.56 UF 200V
⚠ C424	P4N2A9682H	CMPP 0.0068UF 1600V
⚠ C425	C034BN7E2K	CC 150 PF 2KV
C428	C13VB07Q2K	CC 470 PF 2KV B
C429	C13VB07Q2K	CC 470 PF 2KV B
C430	C034BN713K	CC 0.001 UF 2KV
⚠ C431	E0E7FD220M	CE 22 UF 250V
C432	P613T1104J	CMPL 0.1 UF 100V TF
C433	E00IT8220M	CE 22 UF 100V
C434	P3N1F2153J	CPP 0.015 UF 200V
C438	C0JTB05U2K	CC 680 PF 500V YB
C440	P1S3T0332J	CP 0.0033UF 50V
C445	P1S3T0102J	CP 0.001 UF 50V
C501	C0JTB05H3K	CC 0.0022UF 500V YB
C502	C0J0B07H3K	CC 0.0022UF 2KV YB
C503	C0J0B07H3K	CC 0.0022UF 2KV YB
⚠ C506	P2420A224M	CMP 0.22 UFAC125V/250V

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
	CAPACITORS (CONT.)	
⚠ C507	E51CFC561M	CE 560 UF 200V
C509	C034BN7Q2K	CC 470 PF 2KV
C510	P1S3T0153J	CP 0.015 UF 50V
C511	C0JTB04Q2K	CC 470 PF 50V YB
C512	C034BN7E3K	CC 0.0015UF 2KV
C513	C0JTSL412J	CC 100 PF 50V SL
C514	P1S3T0473J	CP 0.047 UF 50V
⚠ C515	E0E7TB100M	CE 10 UF 160V
C516	C0JTB05Q2K	CC 470 PF 500V YB
C517	C034BN7W2K	CC 820 PF 2KV
C518	C0JTB05Q2K	CC 470 PF 500V YB
C519	C0JTB05Q2K	CC 470 PF 500V YB
⚠ C520	E02LT3102M	CE 1000 UF 25V
⚠ C521	E53ZFB221M	CE 220 UF 160V VZ
⚠ C522	E001T5010M	CE 1 UF 50V
⚠ C523	E02LT2102M	CE 1000 UF 16V
⚠ C524	E53ZF3222M	CE 2200 UF 25V VZ
⚠ C525	E001T2102M	CE 1000 UF 16V
⚠ C526	E0GST1471M	CE 470 UF 10V
C528	C0JTF04H4Z	CC 0.022 UF 50V YF
⚠ C531	C034B0JH2K	CC 220 PF 125V
C535	E001T3101M	CE 100 UF 25V
C540	E53ZTB100M	CE 10 UF 160V VZ
C541	E53ZTB100M	CE 10 UF 160V VZ
⚠ C542	C034B0JH2K	CC 220 PF 125V
⚠ C543	C034E0JH3M	CC 2200 PF 125V
C560	C034BN7S2K	CC 560 PF 2KV
C601	P6M3T0104J	CMPL 0.1 UF 50V TF
C602	P6M3T0104J	CMPL 0.1 UF 50V TF
C603	P6M3T0104J	CMPL 0.1 UF 50V TF
C604	E50HT52R2M	CE 2.2 UF 50V
C605	P6M3T0124J	CMPL 0.12 UF 50V TF
C606	P6M3T0103J	CMPL 0.01 UF 50V TF
C607	CS0RSL4P1J	CC 43 PF 50V SL
C608	CS0RB0414K	CC 0.01 UF 50V B
C609	E53KT4470M	CE 47 UF 35V
C610	CS0RB0414K	CC 0.01 UF 50V B
C611	CS0RB0414K	CC 0.01 UF 50V B
C612	CS0SB0414K	CC 0.01 UF 50V B
C613	CS0SB0414K	CC 0.01 UF 50V B
C614	CS0SB0414K	CC 0.01 UF 50V B
C615	CS0RB0414K	CC 0.01 UF 50V B
C616	CS0RCH4B1J	CC 12 PF 50V CH
C617	P1S3T0472J	CP 0.0047UF 50V
C618	CS0SB04G4K	CC 0.018 UF 50V B
C620	CS0RSL4T1J	CC 62 PF 50V SL
C621	CS0RSL411J	CC 24 PF 50V SL
C623	CS0RB0414K	CC 0.01 UF 50V B
C624	E50HT52R2M	CE 2.2 UF 50V
C625	E50HT2101M	CE 100 UF 16V
C626	E50HT5010M	CE 1 UF 50V
C631	E50HT2101M	CE 100 UF 16V
C638	E50HT5100M	CE 10 UF 50V
C651	E50HT5R33M	CE 0.33 UF 50V
C652	E50HT5010M	CE 1 UF 50V
C653	CS0RB0414K	CC 0.01 UF 50V B
C654	CS0RB0414K	CC 0.01 UF 50V B
C655	CS0RB0414K	CC 0.01 UF 50V B
C656	E53KT4470M	CE 47 UF 35V
C657	E50HT5100M	CE 10 UF 50V
C697	E50HT2101M	CE 100 UF 16V
C802	C0JTSL512J	CC 100 PF 500V SL
C805	C0JTSL412J	CC 100 PF 50V SL
C806	C0JTB04L2K	CC 330 PF 50V YB
C807	C0JTSL4G2J	CC 180 PF 50V SL
C813	C13VB07H3K	CC 2200 PF 2KV B
C820	C0JTSL4E2J	CC 150 PF 50V SL
C821	C0JTSL412J	CC 240 PF 50V SL
C822	C034BN7K3K	CC 0.0027UF 2KV
C901	E02LT2221M	CE 220 UF 16V
C902	CS0RB0414K	CC 0.01 UF 50V B
C903	E026T5010M	CE 1 UF 50V
C904	E026T52R2M	CE 2.2 UF 50V
C905	E026T5010M	CE 1 UF 50V
C906	E026T52R2M	CE 2.2 UF 50V
C907	E026T5010M	CE 1 UF 50V
C908	E026T52R2M	CE 2.2 UF 50V
C909	E02LT2471M	CE 470 UF 16V
C910	CS0RB0414K	CC 0.01 UF 50V B
C911	CS0RSL4N1J	CC 39 PF 50V SL
C912	CS0RSL4N1J	CC 39 PF 50V SL
C913	CS0RSL4N1J	CC 39 PF 50V SL
C914	E50HT5100M	CE 10 UF 50V
C1001	CS0SB04H4K	CC 0.022 UF 50V B

REF.NO.	PART NO.	DESCRIPTION
	CAPACITORS (CONT.)	
C1002	CS0RCH4K1J	CC 27 PF 50V CH
C1003	CS0RCH4H1J	CC 22 PF 50V CH
C1004	CS0SB04H4K	CC 0.022 UF 50V B
C1005	CS0SB04L4K	CC 0.033 UF 50V B
C1006	CS0SF0216Z	CC 1 UF 16V F
C1008	CS0SB04H4K	CC 0.022 UF 50V B
C1009	E50HT2101M	CE 100 UF 16V
C1010	CS0SB04H4K	CC 0.022 UF 50V B
C1011	E53KT3101M	CE 100 UF 25V
C1013	CS0SSL4Q2J	CC 470 PF 50V SL
C1014	CS0SSL4Q2J	CC 470 PF 50V SL
C1015	CS0RSL4Q2J	CC 470 PF 50V SL
C1017	CS0SB0413K	CC 1000 PF 50V B
C1018	CS0SB04H4K	CC 0.022 UF 50V B
C1019	E03PT2101M	CE 100 UF 16V
C1020	E020T5010M	CE 1 UF 50V
C1021	E020T5010M	CE 1 UF 50V
C1022	CS0RSL4L2J	CC 330 PF 50V SL
C1023	E024T52R2M	CE 2.2 UF 50V
C1024	CS0RSL412J	CC 100 PF 50V SL
C1025	E024T2470M	CE 47 UF 16V
C1026	E024T2220M	CE 22 UF 16V
C1027	CS0RB0413K	CC 1000 PF 50V B
C1044	E001T0102M	CE 1000 UF 6.3V
C1045	CS0RB04L4K	CC 0.033 UF 50V B
C1046	CS0RSL412J	CC 100 PF 50V SL
C1047	CS0RSL4H2J	CC 220 PF 50V SL
C1048	CS0RB0413K	CC 1000 PF 50V B
C1049	E024T2100M	CE 10 UF 16V
C1050	CS0RF0415Z	CC 0.1 UF 50V F
C1051	CS0RB04H4K	CC 0.022 UF 50V B
C1052	CS0RB04H4K	CC 0.022 UF 50V B
C4001	CS0RF0415Z	CC 0.1 UF 50V F
C4004	CS0RSL422J	CC 200 PF 50V SL
C4005	E50HT5010M	CE 1 UF 50V
C4006	CS0RCH430C	CC 3 PF 50V CH
C4007	CS0RCH4N2J	CC 390 PF 50V CH
C4009	E50HT2100M	CE 10 UF 16V
C4010	E50HT2100M	CE 10 UF 16V
C4011	E50HT5010M	CE 1 UF 50V
C4012	CS0SB0414K	CC 0.01 UF 50V B
C4014	E024T5R22M	CE 0.22 UF 50V
C4015	E024T5010M	CE 1 UF 50V
C4016	CS0SB0414K	CC 0.01 UF 50V B
C4017	CS0SB0415K	CC 0.1 UF 50V B
C4018	E50HT5010M	CE 1 UF 50V
C4019	CS0SB04H4K	CC 0.022 UF 50V B
C4020	E50HT5010M	CE 1 UF 50V
C4021	CS0SB04Q4K	CC 0.047 UF 50V B
C4022	CS0SB0414K	CC 0.01 UF 50V B
C4023	E024T0101M	CE 100 UF 6.3V
C4024	CS0RB0414K	CC 0.01 UF 50V B
C4025	E50HT2100M	CE 10 UF 16V
C4026	CS0SB0414K	CC 0.01 UF 50V B
C4027	E020T2100M	CE 10 UF 16V
C4028	E50HT2100M	CE 10 UF 16V
C4029	CS0RB0414K	CC 0.01 UF 50V B
C4030	CS0RB0414K	CC 0.01 UF 50V B
C4032	CS0RSL412J	CC 100 PF 50V SL
C4033	CS0RSL4K1J	CC 27 PF 50V SL
C4034	CS0RSL4N1J	CC 39 PF 50V SL
C4036	CS0RSL412J	CC 100 PF 50V SL
C4037	CS0RSL4S1J	CC 56 PF 50V SL
C4039	CS0SB0414K	CC 0.01 UF 50V B
C4040	CS0RCH4W1J	CC 82 PF 50V CH
C4041	CS0RCH4H1J	CC 22 PF 50V CH
C4042	CS0SB0414K	CC 0.01 UF 50V B
C4043	CS0SB0414K	CC 0.01 UF 50V B
C4044	P232W0104J	CMPL 0.1 UF 50V
C4045	E024T2100M	CE 10 UF 16V
C4046	E024T5010M	CE 1 UF 50V
C4047	CS0RSL412J	CC 100 PF 50V SL
C4057	CS0RSL4E2J	CC 150 PF 50V SL
C4060	CS0RSL4H2J	CC 220 PF 50V SL
C4062	E50HT0101M	CE 100 UF 6.3V
C4063	CS0RSL4K2J	CC 270 PF 50V SL
C4064	E50HT0101M	CE 100 UF 6.3V
C4065	CS0SB0414K	CC 0.01 UF 50V B
C4066	CS0RB0414K	CC 0.01 UF 50V B
C4067	P6M3T0224J	CMPL 0.22 UF 50V
C4068	CS0RB0414K	CC 0.01 UF 50V B
C4070	CS0SB0415K	CC 0.1 UF 50V B
C4076	CS0RSL4B1J	CC 12 PF 50V SL
C4077	CS0SSL412J	CC 100 PF 50V SL

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
		CAPACITORS (CONT.)
C4088	CS0RCH4H2J	CC 220 PF 50V CH
C4090	CS0RF0415Z	CC 0.1 UF 50V F
C4094	CS0SCH412J	CC 100 PF 50V CH
C4101	CS0RB0414K	CC 0.01 UF 50V B
C4102	CS0SF04H4Z	CC 0.022 UF 50V F
C4103	CS0RB04H4K	CC 0.022 UF 50V B
C4106	E50HT5010M	CE 1 UF 50V
C4107	E50HT0470M	CE 47 UF 6.3V
C4108	CS0RB0414K	CC 0.01 UF 50V B
C4110	CS0RB0414K	CC 0.01 UF 50V B
C4112	CS0RB0413K	CC 1000 PF 50V B
C4113	CS0RB0413K	CC 1000 PF 50V B
C4114	CS0RB0413K	CC 1000 PF 50V B
C4115	CS0RB0413K	CC 1000 PF 50V B
C4119	CS0RCH4Q1J	CC 47 PF 50V CH
C4120	CS0RCH4Q1J	CC 47 PF 50V CH
C4123	E50HT2470M	CE 47 UF 16V
C4124	CS0RB04H4K	CC 0.022 UF 50V B
C4125	CS0RCH4E1J	CC 15 PF 50V CH
C4128	CS0RF0415Z	CC 0.1 UF 50V F
C4129	CS0RB0414K	CC 0.01 UF 50V B
C4154	CHG0CH4E1J	CC 15 PF 50V
C4201	CS0SB0415K	CC 0.1 UF 50V B
C4202	E50HT0221M	CE 220 UF 6.3V
C4203	E50HT5010M	CE 1 UF 50V
C4205	CS0RSL4Q2J	CC 470 PF 50V SL
C4209	E50HT2100M	CE 10 UF 16V
C4210	CS0RSL4Q2J	CC 470 PF 50V SL
C4211	E00IT1471M	CE 470 UF 10V
C4213	E00IT1471M	CE 470 UF 10V
C4226	E00IT2331M	CE 330 UF 16V
C4227	E00IT2331M	CE 330 UF 16V
C5001	CS0RB0414K	CC 0.01 UF 50V B
C5002	E50HT54R7M	CE 4.7 UF 50V
C5003	P6M3T0104J	CMPL 0.1 UF 50V TF
C5004	CS0SF0316Z	CC 1 UF 25V F
C5005	CS0RBQ4H3K	CC 2200 PF 50V B
C5006	CS0RB04B3K	CC 1200 PF 50V B
C5007	CS0SB0415K	CC 0.1 UF 50V B
C5008	E50HT2100M	CE 10 UF 16V
C5009	E02ET2100M	CE 10 UF 16V
⚠ C5010	P341T1223J	CPP 0.022 UF 100V
⚠ C5011	E024T1470M	CE 47 UF 10V
C5012	CS0SB0414K	CC 0.01 UF 50V B
C5013	CS0SB0414K	CC 0.01 UF 50V B
C5014	E50HT53R3M	CE 3.3 UF 50V
C5015	CS0RF0415Z	CC 0.1 UF 50V F
C5016	CS0SB0415K	CC 0.1 UF 50V B
C5017	P1S3T0103J	CP 0.01 UF 50V
C5018	E50HT2470M	CE 47 UF 16V
C5019	E50HT54R7M	CE 4.7 UF 50V
C5020	CS0RSL4Q2J	CC 470 PF 50V SL
C5021	CS0SB04K4K	CC 0.027 UF 50V B
C5024	CS0SF0316Z	CC 1 UF 25V F
C5025	E50HT2470M	CE 47 UF 16V
C5027	CS0RB04S3K	CC 5600 PF 50V B
C5028	CS0SB04K4K	CC 0.027 UF 50V B
C6001	CS0RB04H3K	CC 2200 PF 50V B
C6003	E50HT54R7M	CE 4.7 UF 50V
C6004	CS0RB0413K	CC 1000 PF 50V B
C6005	CS0RB0414K	CC 0.01 UF 50V B
C6006	CS0RB0414K	CC 0.01 UF 50V B
C6007	CS0RB0414K	CC 0.01 UF 50V B
C6008	CS0RB0414K	CC 0.01 UF 50V B
C6009	CS0RB0414K	CC 0.01 UF 50V B
C6010	CS0RB04L2K	CC 330 PF 50V B
C6011	E50HT50R1M	CE 0.1 UF 50V
C6013	CS0SB04K4K	CC 0.027 UF 50V B
C6014	E02OT5010M	CE 1 UF 50V
C6017	CS0RCH4Q1J	CC 47 PF 50V CH
C6018	CS0RCH4L1J	CC 33 PF 50V CH
C6019	E50HT5R47M	CE 0.47 UF 50V
C6020	CS0RB0413K	CC 1000 PF 50V B
C6021	P6M3T0683J	CMPL 0.068 UF 50V
C6022	CS0RF03L5Z	CC 0.33 UF 25V F
C6024	E50HT2100M	CE 10 UF 16V
C6025	CS0RB0414K	CC 0.01 UF 50V B
C6031	E02LT2221M	CE 220 UF 16V
C6032	CS0SB04H4K	CC 0.022 UF 50V B
C6033	E00IT1471M	CE 470 UF 10V
C6035	E50HT2470M	CE 47 UF 16V
C6036	CS0RB0414K	CC 0.01 UF 50V B
C6042	CS0RB0414K	CC 0.01 UF 50V B

REF.NO.	PART NO.	DESCRIPTION
		CAPACITORS (CONT.)
C6046	E50HT0101M	CE 100 UF 6.3V
C6048	CS0SB0415K	CC 0.1 UF 50V B
C6501	E50HT2470M	CE 47 UF 16V
C6502	CS0SB04H4K	CC 0.022 UF 50V B
C6504	P1S3T0102J	CP 0.001 UF 50V
C6505	CS0RB04L2K	CC 330 PF 50V B
C6506	E50HT5R47M	CE 0.47 UF 50V
C6507	CS0SB0413K	CC 1000 PF 50V B
C6508	E50HT5010M	CE 1 UF 50V
C6509	E50HT52R2M	CE 2.2 UF 50V
C8001	CHGTB0412J	CC 100 PF 50V
		SEMICONDUCTORS
D101	D28T10ELS6	DIODE,RECTIFIER 10ELS6TA1
D102	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
D105	D28TEQS040	DIODE,SCHOTTKY 11EQS04TA1
D106	D28TEQS040	DIODE,SCHOTTKY 11EQS04TA1
D107	D1VT001320	DIODE,SILICON 1SS132T-77
D108	D1VT001320	DIODE,SILICON 1SS132T-77
D109	D1VT001320	DIODE,SILICON 1SS132T-77
D110	D1VT001320	DIODE,SILICON 1SS132T-77
D111	D1VT001320	DIODE,SILICON 1SS132T-77
D112	D1VT001320	DIODE,SILICON 1SS132T-77
D113	D94TA6R8J2	DIODE,ZENER HZS6R8JB2-TE
D352	D1VT001320	DIODE,SILICON 1SS132T-77
⚠ D406	D28T011E10	DIODE,SILICON 11E1TA1
⚠ D407	D28T011ES1	DIODE,SILICON 11ES1TA1
⚠ D408	D92T0270B2	DIODE,ZENER RD27EB 2 TA11R
⚠ D409	D92T0110B2	DIODE,ZENER RD11EB 2 TA11R
⚠ D410	D28T10ELS6	DIODE,RECTIFIER 10ELS6TA1
⚠ D411	D28T10ELS6	DIODE,RECTIFIER 10ELS6TA1
⚠ D412	D28T10ELS6	DIODE,RECTIFIER 10ELS6TA1
⚠ D413	D28T10ELS6	DIODE,RECTIFIER 10ELS6TA1
D414	D1VT001320	DIODE,SILICON 1SS132T-77
D415	D1VT001320	DIODE,SILICON 1SS132T-77
D418	D1VT024720	DIODE,SILICON 1S2472T-77
⚠ D501	D2BTRM11C0	DIODE,RECTIFIER RM11C
⚠ D502	D2BTRM11C0	DIODE,RECTIFIER RM11C
⚠ D503	D2BTRM11C0	DIODE,RECTIFIER RM11C
⚠ D504	D2BTRM11C0	DIODE,RECTIFIER RM11C
D506	D92T07R5B2	DIODE,ZENER RD7.5EB 2 TA11R
D507	D28T011E20	DIODE,SILICON 11E2TA1
D508	D28T011E20	DIODE,SILICON 11E2TA1
⚠ D509	D28T10ELS6	DIODE,RECTIFIER 10ELS6TA1
⚠ D510	D28115DF60	DIODE,SILICON 15DF6-FC
⚠ D511	D28T10ELS2	DIODE,RECTIFIER 10ELS2TA1
⚠ D512	D2811DQ040	DIODE,SILICONE 21DQ04FE5R
⚠ D513	D280F5KF20	DIODE,FAST RECOVERY F5KF20
D515	D92T0300B4	DIODE,ZENER RD30EB 4 TA11R
D516	D28T011ES1	DIODE,SILICON 11ES1TA1
D517	D1VT001320	DIODE,SILICON 1SS132T-77
D518	D1VT001320	DIODE,SILICON 1SS132T-77
D522	D1VT001320	DIODE,SILICON 1SS132T-77
D609	D1VT001320	DIODE,SILICON 1SS132T-77
D611	D1VT001320	DIODE,SILICON 1SS132T-77
D652	D92T0200B2	DIODE,ZENER RD20EB 2 TA11R
D653	D1VT001320	DIODE,SILICON 1SS132T-77
D654	D1VT001320	DIODE,SILICON 1SS132T-77
D655	D1VT001320	DIODE,SILICON 1SS132T-77
D671	DD3RLFB01L	DIODE,SILICON LFB-01L
D801	D1VT001320	DIODE,SILICON 1SS132T-77
D802	D1VT001320	DIODE,SILICON 1SS132T-77
D803	D1VT001320	DIODE,SILICON 1SS132T-77
D901	D92T0120B2	DIODE,ZENER RD12EB 2 TA11R
D902	D92T0120B2	DIODE,ZENER RD12EB 2 TA11R
D903	D97U01201B	DIODE,ZENER MTZJ12B T-77
D904	D92T07R5B2	DIODE,ZENER RD7.5EB 2 TA11R
D1001	0010G00050	INFRARED LED GL451L1
D1003	D1VT001320	DIODE,SILICON 1SS132T-77
D1007	D1VT001320	DIODE,SILICON 1SS132T-77
D1008	D1VT024720	DIODE,SILICON 1S2472T-77
D1009	D28T011E10	DIODE,SILICON 11E1TA1
D1010	D97U01301B	DIODE,ZENER MTZJ13B T-77
D1011	D97U01001C	DIODE,ZENER MTZJ10C T-77
D4001	D1VTB721Q0	DIODE,SCHOTTKY RB721Q
D4004	D94TA6R8J2	DIODE,ZENER HZS6R8JB2-TE
D4005	D94TA6R8J2	DIODE,ZENER HZS6R8JB2-TE
D4006	D94TA6R8J2	DIODE,ZENER HZS6R8JB2-TE
D4007	D94TA130J2	DIODE,ZENER HZS13JB2-TE
D4101	D17V001320	DIODE,SILICON 1SS132T-91
D4206	D94TA130J2	DIODE,ZENER HZS13JB2-TE
D4210	D23U1003A3	DIODE,SCHOTTKY SB10-03A3
D6503	D97U05R11B	DIODE,ZENER MTZJ5.1B T-77

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
		SEMICONDUCTORS (CONT.)
D8001	002132Q020	LED SLZ-136C-11-AB-T1
D8004	002132Q020	LED SLZ-136C-11-AB-T1
D8005	002132Q020	LED SLZ-136C-11-AB-T1
D8006	002132Q020	LED SLZ-136C-11-AB-T1
IC101	I56D07016B	OEC7016B TIMER/OSD/DAC
IC102	IC4D04C01A	XL24C01AP MEMORY
IC103	I9UJ0T600H	PST600H RESET
IC104	I9UJ0T600H	PST600H RESET
⚠ IC353	I01SP52650	AN5265 AUDIO AMP
⚠ IC402	I03SD78370	LA7837 V.OUTPUT
⚠ IC403	I02A98M100	UPC78M10 10V POWER REGULATOR
⚠ IC501	I23S900100	STK730-010 POWER REGULATOR
⚠ IC502	I03A97805V	L7805V 5V POWER REGULATOR
⚠ IC503	I01K978090	AN7809F 9V POWER REGULATOR
⚠ IC601	I05DE88010	TA8801AN VIDEO CHROMA DEFLECTION
IC604	I03S070160	LA7016 SYNC SWITCH
⚠ IC901	I05DE87820	TA8782N AUTOMATIC KINE BIAS
IC1001	I57F59026B	OEC9026B SYSCON/SERVO
⚠ IC1002	I07S0247V1	BA6247-V1 LOADING MOTOR DRIVE
IC4001	I03D374200	LA7420 LUMI.AND CHROMI.SIGNAL
IC4002	I53D399600	LC89960 CMOS-CCD 1H DELAY LINE
IC4101	I03DG74100	LA7410 PRE AND REC AMP
⚠ IC4203	I0QK978050	NJM7805FA 5V REGULATOR
⚠ IC5001	I03D772860	LA7286 AUDIO REC/PB AMP
IC6001	I03DA7577L	LA7577L VIF/SIF DET
IC6501	I03S072100	LA7210 SYNC DET
Q101	T8YA2412K0	2SC2412KT147(R,S) H.PULSE
Q102	T8YA2412K0	2SC2412KT147(R,S) V.SYNC DRIVE
Q103	T8YA2412K0	2SC2412KT147(R,S) POWER FAIL SW.
Q104	T8YA2412K0	2SC2412KT147(R,S) B.B SWITCH
Q105	T8YA2412K0	2SC2412KT147(R,S) BUFFER
Q106	T8YA2412K0	2SC2412KT147(R,S) BUFFER
Q353	T8YA2412K0	2SC2412KT147(R,S) BUFFER
Q354	T8YA2412K0	2SC2412KT147(R,S) MUTE SWITCH
⚠ Q405	TC3T022710	2SC2271(D,E)-AE H.DRIVE
⚠ Q406	TDUQ020890	2SD2089 H.OUTPUT
Q501	TC3T029090	2SC2909(S,T)-AA 103V SWITCHING
⚠ Q502	TA3T1371A0	2SA1371(D,E)-AE 103V DRIVE
⚠ Q503	TC30041600	2SC4160-ORI 103V DRIVE
Q504	TD3T007340	2SD734(E,F,G)-AA RELAY DRIVE
Q602	T8YA2412K0	2SC2412KT147(R,S) BUFFER
Q603	T8YA2412K0	2SC2412KT147(R,S) BUFFER
Q604	T8YA2412K0	2SC2412KT147(R,S) BUFFER
Q653	T8YA2412K0	2SC2412KT147(R,S) BUFFER
⚠ Q801	TA3T016240	2SA1624-AA RED OUTPUT
⚠ Q802	TA3T016240	2SA1624-AA GREEN OUTPUT
⚠ Q803	TA3T016240	2SA1624-AA BLUE OUTPUT
⚠ Q804	TC3T034680	2SC3468(D,E)-AE RED AMP
⚠ Q805	TC3T034680	2SC3468(D,E)-AE GREEN AMP
⚠ Q806	TC3T034680	2SC3468(D,E)-AE BLUE AMP
⚠ Q901	TALT00952L	2SA952(C)-T L BUFFER
Q1001	0000G00070	PT493FL1 EOT
Q1002	0000G00070	PT493FL1 BOT
⚠ Q1003	TDWT011110	2SD1111-AA SOLENOID DRIVER
Q1007	TNYTC05001	DTC124EKT147 LP ENV.DET SW.
Q1009	TNYTC05001	DTC124EKT147 SP SW.
Q1010	TPYTC05001	DTA124EKT147 TRICK PB 5V DRIVER
Q1011	TNYTC05001	DTC124EKT147 TRICK PB SW.
Q1012	TNYTC05001	DTC124EKT147 SW.
Q1014	TNYTC05001	DTC124EKT147 V.REC START SW.L
Q1015	T8YA2412K0	2SC2412KT147(R,S) REC MUTE-H DRIV.
Q1016	TNYTC05001	DTC124EKT147 LP SW.
Q1017	TNYTC05001	DTC124EKT147 SW.
Q4001	T6YA1037K0	2SA1037KT147(R,S) BUFFER
Q4003	T6YA1037K0	2SA1037KT147(R,S) BUFFER
Q4004	T8YA2412K0	2SC2412KT147(R,S) BUFFER
Q4005	T6YA1037K0	2SA1037KT147(R,S) BUFFER
Q4006	T6YA1037K0	2SA1037KT147(R,S) EQ AMP
Q4008	T8YA2412K0	2SC2412KT147(R,S) AMP
Q4009	T6YA1037K0	2SA1037KT147(R,S) AMP
Q4013	T8YA2412K0	2SC2412KT147(R,S) BUFFER
Q4014	T8YA2412K0	2SC2412KT147(R,S) BUFFER
Q4015	T6YA1037K0	2SA1037KT147(R,S) BUFFER
Q4016	T6YA1037K0	2SA1037KT147(R,S) BUFFER
Q4020	T6YA1037K0	2SA1037KT147(R,S) BUFFER
Q4022	TNYTC05001	DTC124EKT147 VV H SW.
Q4024	T8YA2412K0	2SC2412KT147(R,S) TRICK PB SW.
Q4101	T8YA2412K0	2SC2412KT147(R,S) AMP
Q4102	TPYTB05001	DTA114EKT147 VV 5V SW.
Q4103	TNYTB05001	DTC114EKT147 INV.
Q4104	T8YA2412K0	2SC2412KT147(R,S) BUFFER
Q4201	TBWT009260	2SB926(S,T)-AA P.CON 9V DRIVER
Q4202	T8YA2412K0	2SC2412KT147(R,S) EXT IN SW.

REF.NO.	PART NO.	DESCRIPTION
		SEMICONDUCTORS (CONT.)
Q4204	T8YA2412K0	2SC2412KT147(R,S) P.CON SW.
Q4208	T8YA2412K0	2SC2412KT147(R,S) P.CON SW.
Q4209	TBWT009260	2SB926(S,T)-AA P.CON 5V DRIVER
⚠ Q5003	TCKT013170	2SC1317(Q,R,S)-T BIAS OSC
Q6004	TC3T030000	2SC3000-AA PREAMP
Q6005	T8YA2412K0	2SC2412KT147(R,S) AUDIO MUTE
Q6008	T6YA1037K0	2SA1037KT147(R,S) BUFFER
Q6501	T8YA2412K0	2SC2412KT147(R,S) BUFFER
		COILS & TRANSFORMERS
L401	021679472K	COIL 4.7 MH
L403	02116D180K	COIL 18 UH
⚠ L501	0291000025	COIL,LINE FILTER AC 9-000025
⚠ L502	0294000062	COIL,LINE FILTER 9-000062
⚠ L503	028Q140017	COIL,DEGAUSS 8Q140017
L504	02116D680K	COIL 68 UH
L601	021LA6560K	COIL 56 UH
L602	021LA6330K	COIL 33 UH
L603	021673560K	COIL 56 UH
L801	021679101K	COIL 100 UH
L4001	021LA6470K	COIL 47 UH
L4002	02167D101K	COIL 100 UH
L4004	021LA6101K	COIL 100 UH
L4005	021LA68R2K	COIL 8.2 UH
L4006	021LA6180K	COIL 18 UH
L4007	021LA6560K	COIL 56 UH
L4008	021LA6150K	COIL 15 UH
L4009	021673101K	COIL 100 UH
L4012	021LA6271K	COIL 270 UH
L4013	021LA6390K	COIL 39 UH
L4015	021673101K	COIL 100 UH
L4016	021673101K	COIL 100 UH
L4018	021LA6121K	COIL 120 UH
L4101	021673101K	COIL 100 UH
L4102	021673101K	COIL 100 UH
L5001	021673102K	COIL 1000 UH
L5002	021673101K	COIL 100 UH
L6001	021LA61R2M	COIL 1.2 UH
L6002	021673101K	COIL 100 UH
L6004	021LA61R5M	COIL 1.5 UH
L6006	021LA6150K	COIL 15 UH
L6007	021LA6390K	COIL 39 UH
L6008	033602020N	COIL,VIDEO IFT 3602020N
L6009	021LA6100K	COIL 10 UH
L6010	033602021N	COIL,VIDEO IFT 3602021N
L6011	021673101K	COIL 100 UH
L6012	021LA6180K	COIL 18 UH
L6501	021673101K	COIL 100 UH
⚠ T401	03305Y002G	TRANS.,HORIZONTAL DRIVE 305Y002
⚠ T501	048135012W	TRANSFORMER,SWITCHING 8135012W
⚠ T5001	033626008R	COIL,BIAS OSC 3626008
		JACKS
J351	060C121008	JACK,RCA 3.5 TC38-001
⚠ J801	0666120011	SOCKET,CRT CVT3325-0603
J4201	060M021002	JACK,PLATE T6551-ABCC
		SWITCHES
SW1020	0500A01026	MPU10230MLB0 TAB SWITCH
SW8001	0504201T31	SKHVBE075B CH.DOWN
SW8002	0504201T31	SKHVBE075B CH.UP
SW8003	0504201T31	SKHVBE075B VOL.UP
SW8004	0504201T31	SKHVBE075B VOL.DOWN
SW8006	0504201T31	SKHVBE075B POWER ON/OFF
SW8007	0504201T31	SKHVBE075B REC/OTR
SW8008	0504201T31	SKHVBE075B STOP/EJECT
SW8009	0504201T31	SKHVBE075B PLAY
		VARIABLE RESISTORS
VR402	V1263U4BT7	VR,SEMIFIXED 68KB V.SIZE
VR403	V145D13B03	VR,SEMIFIXED 1KB V.POSI.
VR501	V1263Q5BTC	VR,SEMIFIXED 470KB H.SIZE
VR651	V126314BTC	VR,SEMIFIXED 10KB H.POSI.
VR4001	V126313BTC	VR,SEMIFIXED 1KB COMB PHASE ADJ.
VR5001	V126314BTC	VR,SEMIFIXED 10KB AUDIO PB LEVEL
VR6001	V1263E4BTC	VR,SEMIFIXED 15KB RF AGC
VR6002	V126314BTC	VR,SEMIFIXED 10KB COLOR LEVEL
		P.C. BOARD ASSEMBLIES
PCB010	A50513B01A	PCB ASS'Y VM4072D VCR MAIN
PCB030	A50513B03A	PCB ASS'Y VE4650A OPERATION
PCB070	A50513B07AT	PCB ASS'Y TM0313D-T TV MAIN
PCB110	A50513B11A	PCB ASS'Y TC0202D CRT

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
	P.C. BOARD ASSEMBLIES (CONT.)	
PCB330	A3E103C33A	PCB ASS'Y VE4642B HEAD AMP
PCB350	A50513B35A	PCB ASS'Y VE0566B IF
PCB390	A50513B39A	PCB ASS'Y VE4634D EARPHONE
PCB550	A4A002A550	SEE CHASSIS/FRONT LOADING REPLACEMENT PARTS LIST
	MISCELLANEOUS	
ANT001	125K108016	ANTENNA,ROD T4-216BNK-B
B401	024JT03551	CORE,BEADS FBA04HA450AB-00
B402	024JT03551	CORE,BEADS FBA04HA450AB-00
B501	024JT03551	CORE,BEADS FBA04HA450AB-00
B503	024JT03551	CORE,BEADS FBA04HA450AB-00
B504	024JT03551	CORE,BEADS FBA04HA450AB-00
B505	024JT03551	CORE,BEADS FBA04HA450AB-00
B506	024JT03551	CORE,BEADS FBA04HA450AB-00
CD300	068D12240A	CORD,CONNECTOR 8D12240A
CD301	068112390A	CORD,CONNECTOR 8112390A
⚠ CD501	120R614304	CORD,AC OR614304
CD801	068M82025A	CORD,CONNECTOR 8M82025A
CD803	122U042802	CORD,JUMPER 2-042802
CD810	068128087A	CORD,CONNECTOR 8128087A
CD820	06812B018A	CORD,CONNECTOR 812B018A
CD850	068128085A	CORD,CONNECTOR 8128085A
CD860	068122053A	CORD,CONNECTOR 8122053A
CP301	0694120099	CONNECTOR PCB SIDE 171825-2
CP306	0694120010	CONNECTOR PCB SIDE 2-171825-2
CP401	069W340018	CONNECTOR PCB SIDE TS-80P-04-V1
CP501	0694430100	CORD,UX CONNECTOR 2-173270-3
CP502	069W420029	CONNECTOR PCB SIDE TV-50P-02-A1
CP801	069W320018	CONNECTOR PCB SIDE TS-80P-02-V1
CP806	069W010020	CONNECTOR PCB SIDE 005P-1100
CP810	0694280129	CONNECTOR PCB SIDE 173981-8
CP820	06942B0129	CONNECTOR PCB SIDE 1-173981-1
CP850	0694280129	CONNECTOR PCB SIDE 173981-8
CP860	0694220129	CONNECTOR PCB SIDE 173981-2
CD4103	122L061802	CORD,JUMPER 2L061802
CD4105	122L061602	CORD,JUMPER 2L061602
CD6001	068101407A	CORD,CONNECTOR 8101407A
CF6001	1028045R73	FILTER,SAW TSF1203M
CF6003	1012T4R509	FILTER,CERAMIC SFSH4.5MCB-TF21
CF6004	1012T4R503	FILTER,CERAMIC TRAP TPS4.5MB-TF21
CF6005	1012T4R512	FILTER,C.DISCRI CDSH4.5ME49K-TF21
CP4101	069R740479	CONNECTOR PCB SIDE 52492-0420
CP6001	069J180260	CONNECTOR PCB SIDE 6035B-08Z002-T
CP8001	069H1A0209	CONNECTOR PCB SIDE ILG10P-S3L-PCB
CP8002	069H150209	CONNECTOR PCB SIDE ILG5P-S3L-PCB
CP803A	067R104019	WIRE HOLDER 51052-0400
CP803B	067R104019	WIRE HOLDER 51052-0400
CUS012	800JF00204	CUSHION-C
CUS351	800WF00004	CUSHION-A
CX1003	069J2J0490	CONNECTOR PCB SIDE 6077B-1-19A-T
CX4001	069E730480	CONNECTOR PCB SIDE 18 5085 003 010
CX4004	069E710480	CONNECTOR PCB SIDE 18 5085 018 010
CX4102	0697280489	CONNECTOR PCB SIDE TUC-P08P-B1
CY4101	069E730490	CONNECTOR PCB SIDE 28 5085 003 000
CY4102	0697280499	CONNECTOR PCB SIDE TUC-P08X-B1
CY4104	069E710490	CONNECTOR PCB SIDE 28 5085 018 000
DL601	103402R501	DELAY LINE SDL-4104
⚠ F501	081PC04003	FUSE 4A 125V
⚠ FB401	043213009F	TRANSFORMER,FLYBACK 3213009
FH501	06710T0006	HOLDER,FUSE EYF-52BC
FH502	06710T0006	HOLDER,FUSE EYF-52BC
⚠ ICP501	0832H1R201	MICRO FUSE CCV 1.25
⚠ ICP502	0847T00202	IC PROTECTOR ICP-N50T104
⚠ ICP503	0832H05001	MICRO FUSE CCV 5
JR1001	R801R7000J	RC 0 OHM 1/10W
JR1002	R802R8000J	RC 0 OHM 1/8W
JR1003	R903N8000J	RC 0 OHM 1/8W
JR1004	R902N8000J	RC 0 OHM 1/8W
JR4101	R801R7000J	RC 0 OHM 1/10W
JR4102	R802R8000J	RC 0 OHM 1/8W
JR6001	R801R7000J	RC 0 OHM 1/10W
JR6002	R802R8000J	RC 0 OHM 1/8W
NR101	1102610302	R.NETWORK RGLE6X103J
NR1001	11024472T1	R.NETWORK RGLD4X472J-T21
OS8001	077Q010007	REMOTE RECEIVER HC-377M
PF4001	114JL65601	FILTER,LOW PASS 4JL65601
PF5001	0326230038	COIL,TRAP 2623003
⚠ RY501	0560110101	RELAY AJZ32157
⚠ SP353	070V131003	SPEAKER S08J72
TC101	0100514T08	C,CERAMIC TRIMMER TZ03R300TR169T00
⚠ TH501	D8R0C5R0M0	DEGAUSS ELEMENT PTH451C260BF5R0M
TM101	0766093040	TRANSMITTER SBEG20045A
⚠ TU6001	0145K00034	TUNER,VHF-UHF TECC1080PK21B
⚠ V801	098W140455	CRT A34JFQ90X06(W)
X101	100CA8R008	CRYSTAL HC-49/U-S 8.0MHZ

REF.NO.	PART NO.	DESCRIPTION
	MISCELLANEOUS (CONT.)	
X601	100W3R5702	CRYSTAL HC-49/U 3.579545MHZ
X651	1002R01502	CERAMIC OSCILLATOR CSB503F30
X1001	100CA6R001	CRYSTAL HC-49/U-S 6.000MHZ
X4001	100CA3R513	CRYSTAL HC-49/U-S 3.57954MHZ
X6501	1003R50001	CERAMIC OSCILLATOR KBR-500AH2

RESISTOR
RC.....CARBON RESISTOR

CAPACITORS
CC.....CERAMIC CAPACITOR
CE.....ALUMI ELECTROLYTIC CAPACITOR
CP.....POLYESTER CAPACITOR
CPP.....POLYPROPYLENE CAPACITOR
CPL.....PLASTIC CAPACITOR
CMP.....METAL POLYESTER CAPACITOR
CMPL.....METAL PLASTIC CAPACITOR
CMPP.....METAL POLYPROPYLENE CAPACITOR
CST.....STYROL CAPACITOR

MECHANICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
101	A50513B720	CABINET,FRONT ASS'Y
102	701WPJ0501	CABINET,FRONT
103	713WPA0042	GUIDE,REMOCON
104	711WPD0243	PLATE,FRONT
105	735WSA0003	PLATE,SHIELD AUDIO
106	7230005684	FILM,INFORMATION
107	709WPA0008	CABINET HOLDER
108	712WPJ0298	FLAP
109	743WKA0011	SPRING,FLAP
110	741WUA0001	SPRING,EARTH
111	735WPA0214	BUTTON,BASE
112	756JPA0031	HOLDER,FLAP(L)
113	735WPD0316	BUTTON,FRAME
114	756JPA0032	HOLDER,FLAP(R)
115	800WR00023	SHEET,CRT SUPPORT
116	769WSA0002	WASHER 9.1*22*T1
117	8141J50D04	SCREW,TAP TITE(P) GW22 5*40
118	761WPA0027	HOLDER,PCB
119	761WPA0024	HOLDER,TV PCB
120	7232020605	FILM,DECORATION
121	7260000280	SHEET,CRT SERVICEMAN
122	763SAE0001	HEAT SINK
123	800WPA0001	SPACER,FBT
124	763MAE0026	HEAT SINK
125	8990TP1S05	COATING CLIP TP1S-05
126	769WSF0001	METAL SPACER
127	763SAE0017	HEAT SINK
128	771WPA0172	PLATE,JACK
129	702WPA0256	CABINET,BACK
130	7222560718	SHEET,RATING
131	769WPA0003	OPERATION PCB HOLDER
132	752WSA0054	PLATE,DECK SHIELD ASS'Y
133	7230005670	SHEET,LED
134	761WPA0032	DECK,HOLDER
135	850P600438	BELT,FRONT LOADING 2
136	A48901A650	FRONT LOADING UNIT(FL-6B)
137	753WSA0050	CASE,HI-FI AMP SHIELD
138	753WSA0051	LID,HI-FI AMP SHIELD
139	755JNA0043	SHEET,SHIELD
140	788JSE0018	PULLEY SHAFT
141	850P600448	HOLDER,LED(H)
142	850P600451	HOLDER,START SENSOR
143	850P600449	HOLDER,END SENSOR
201	8117540A64	SCREW,TAPPING(BO) TRUSS 4*16
202	8110230B04	SCREW TAP TITE(P) BIND 3*20
203	8117430A02	SCREW,TAPPING(BO) OVAL 3*10
204	8116140A24	SCREW TAPPING(A) PAN 4*12
205	8110630A44	SCREW,TAP TITE(P) BRAZIER 3*14
206	8110630A24	SCREW,TAP TITE(P) BRAZIER 3*12
207	8110630804	SCREW,TAP TITE(P) BRAZIER 3*8
208	8110630604	SCREW,TAP TITE(P) BRAZIER 3*6
209	8107230804	SCREW,TAP TITE(S) BIND 3*8
210	8107630604	SCREW,TAP TITE(S) BRAZIER 3*6
211	8117540B04	SCREW,TAPPING(BO) TRUSS 4*20
212	8117340A24	SCREW,TAPPING(BO) FLAT 4*12
213	8117D30A04	SCREW,TAPPING(BO) WH8 BRAZIER 3*10
---	791WHA0024	LAMIFILM BAG
---	792WHA0134	PACKAGE,TOP
---	792WHA0135	PACKAGE,BOTTOM
---	793WCD0828	GIFT BOX

ACCESSORY REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
---	J4890120	DEW CAUTION SHEET
---	J5051301	INSTRUCTION BOOK
---	J5051302	WARRANTY CARD
---	J5051307	QUICK SET-UP SHEET
TM101	0766093040	TRANSMITTER SBEG20045A
ANT001	125K108016	ANTENNA ROD T4-216BNK-B

CHASSIS/FRONT LOADING REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
301	850P800251	SPRING LEVER REC
302	850A600139	TENSION,BAND ASS'Y
303	850A400077	TENSION,ARM ASS'Y
304	850P800141	SPRING,TENSION ARM
305	850A200036	S REEL ASS'Y
306	850A600136	MAIN BRAKE S ASS'Y
307	850P800187	SPRING,MAIN BRAKE
308	850P600446	ARM,S-S BRAKE 1
309	850P800164	SPRING,SS BRAKE
310	850A400108	BASE,S INCLINED ASS'Y
311	850P800190	SPRING,M-B 3
312	850A200035	T REEL ASS'Y
313	850A600135	MAIN BRAKE T ASS'Y
314	850A400109	BASE,T INCLINED ASS'Y
315	850P600432	ROLLER IMPEDANCE
316	850P000262	BRACKET,WORM 3
317	868501H804	SCREW,TAP TITE(S) PAN W6 3*8
318	850P600306	LEVER,REC.SW
319	850P500042	BASE,AC HEAD 2
320	850P800233	SPRING,AC HEAD BASE 2
321	850A600148	LOADING,MOTOR BOX A ASS'Y
322	850P600317	BELT,LOADING MOTOR
323	850A500008	P-R,LEVER ASS'Y
324	850P600497	NUT ADJUST X2 ZDC
325	850A000142	MAIN CHASSIS Z4 ASS'Y
326	850A400073	PINCH ROLLER ARM ASS'Y
327	850P800149	SPRING,P-R ARM
328	850A400105	LIMITER POST ARM 2 ASS'Y
329	850P800148	SPRING,L-P ARM
330	850P600305	CAM 1
331	850A600114	WORM ASS'Y
332	850A400102	GUIDE ROLLER ASS'Y
333	850A300031	LOADING,LEVER 2 ASS'Y
334	850P600311	LEVER,SUB BRAKE
335	850A900083	LEVER,FRONT LOADING ASS'Y
336	850A300030	LOADING,ARM T ASS'Y
337	850A300029	LOADING,ARM S ASS'Y
338	850A600137	T-S BRAKE 2 ASS'Y
339	850P800165	SPRING,TS BRAKE
340	850A200043	CLUTCH ASS'Y
341	850A200038	IDLER JS ASS'Y
342	850P600410	LEVER,MAIN BRAKE 1
343	850P600310	ACTUATOR,SUB BRAKE
344	850A600129	CLUTCH ACTUATOR JS ASS'Y
345	850P600303	LEVER,TENSION
346	850P400326	O-RING
347	850P600381	SLIDE MAIN BRAKE
348	850P800188	SPRING,M-B SLIDE
349	850A600109	M-B 2 LEVER ASS'Y
350	850A600108	T-A SLIDE ASS'Y
351	850P600416	LEVER,LIMITER POST
352	850P600409	LEVER,CLUTCH ACTUATOR
353	850P300112	SLIDE,LOADING 2
354	850P600304	CAM 2
355	850A600099	M-B 3 LEVER ASS'Y
356	850A300043	GEAR LOADING S ASS'Y
357	850A300044	GEAR LOADING T ASS'Y
358	850P800191	SPRING,LOADING GEAR
359	850P800245	SPRING AZIMUTH 2
360	8144J30604	CONEHEAD SCREW M3*6
361	8146130A31	JOINT SCREW PAN M3*13
362	850P500010	ADJUST NUT
363	850P800189	SPRING,FRONT LOADING LEVER
364	850P600319	PULLEY,LOADING MOTOR
365	850P600316	BELT,REEL
366	850A400088	GUIDE ROLLER ASS'Y
367	850P600315	BELT,FRONT LOADING
368	850P000285	CS-RING 2.6*5.4*0.1
369	850PAA0197	SCREW,MOTOR M3*5
371	850A400112	ARM,AHC UNIT
372	850P800236	SPRING AHC 1
401	850P900430	GEAR,LINK L
402	850P800175	SPRING,LINK GEAR L
403	850P900538	GEAR,SYNCHRO
404	850P900451	LEVER,FLAP 2
405	850P900537	COVER SENSOR 2
406	850A900142	TOP,BRACKET ASS'Y
407	850P900458	LOCKER
408	850P800154	SPRING,LOCKER
409	850A900138	CASS,SIDE L ASS'Y

REF.NO.	PART NO.	DESCRIPTION
410	850P900354	SPRING,PACK
411	850P900536	CASS,SIDE RA
412	850P900474	REMOVING 2
413	850P800198	SPRING,REMOVING 2
414	850A900122	CASS,HOLDER SUB ASS'Y
415	850P900267	SHAFT,SYNCHRO
416	850P900529	TAPE GUIDE PIECE
417	850P900532	BRACKET,SIDE RIA
418	850P900416	LEVER,FRONT LOADING SW.
419	850P800158	SPRING,FRONT LOADING SW.LEVER
420	850A900129	SIDE BRACKET R2 ASS'Y
421	850P900431	GEAR,LINK R
422	850P800153	SPRING,CLUTCH GEAR
423	850P800181	SPRING,LINK GEAR R2
424	850P900432	GEAR,CLUTCH
425	850P900417	LEVER,LOCK
426	850P800159	SPRING,LOCK LEVER
427	850P900438	WHEEL
428	850P900435	LEVER,CLUTCH
429	850P900434	LEVER,SLIDE
430	850P800180	SPRING,SLIDE LEVER 2
431	850P900531	JOINT,PULLEY 2
432	850A900089	WORM ASS'Y
433	850P900450	OPENER A
434	850P800172	SPRING,OPENER A
435	850P800230	SPRING,LOCKER R
436	850P800243	SPRING,EARTH
437	850P900523	SPRING,FRONT LOADING EARTH
438	850P800157	SPRING,FLAP FRONT LOADING
501	8107126604	SCREW,TAP TITE(S) PAN 2.6*6
502	8102130404	SCREW,PAN M3*4
503	8107226804	SCREW,TAP TITE(S) BIND 2.6*8
504	8107230A44	SCREW,TAP TITE(S) BIND 3*14
505	8107230A64	SCREW,TAP TITE(S) BIND 3*16
506	8107230604	SCREW,TAP TITE(S) BIND 3*6
507	8107230804	SCREW,TAP TITE(S) BIND 3*8
508	8110230804	SCREW,TAP TITE(P) BIND 3*8
509	83ETW25000	E-RING 2.5
510	82Q3154B3N	POLYSLIDER WASHER 3.1*5.4*T0.13
	82Q315403N	POLYSLIDER WASHER 3.1*5.4*T0.3
511	82P255504N	POLYSLIDER WASHER(CUT) 2.5*5.5*T0.4
512	82P306005N	POLYSLIDER WASHER(CUT) 3.1*6.0*T0.5
513	82A3270054	WASHER 3.1*7.0*T0.5
514	82A4080054	WASHER 4.3*8.0*T0.5
515	810B126144	SCREW WASHER (B) 2.6*14
516	815DJ20302	SET SCREW 6 CUP POINT M2*3
517	8145J30601	SCREW,+UPSET M3*6
518	83CST35050	CS-RING 3.5
519	83ETW30060	E-RING 3.0
520	8117B26804	SCREW,TAPPING(B0) WH6 2.6*8
521	82P2660C5N	POLYSLIDER WASHER(CUT) 2.6*6.0*T0.25
522	810A123504	SEMS A M2.3*5.0
523	8107126404	SCREW,TAP TITE(S) PAN 2.6*4
550	82Q315405N	POLYSLIDER WASHER 3.1*5.4*T0.5
551	86817CGA04	TAPPING(B0) BIND WH6.5 2.6*10
552	82Q3154C5N	POLYSLIDER WASHER 3.1*5.4*T0.25
CD2002	122L090601	CORD JUMPER 2L090601
CD5003	068123044A	CORD EIS CONNECTOR 8123044
CY1001	069J2J0480	CONNECTOR PCB SIDE 9117S-19A
H5001	1523D91017	HEAD,AUDIO CONTROL HVMZA1184A
H5002	1543D02006	HEAD,FULL ERASE HVFHF0029A
⚠ L1301	02BH000006	ELECTRO MAGNET JTM1012-010100
⚠ M101	1596P58008	MOTOR,LOADING MXN-13FB12F
⚠ M2001	1510S98024	CAPSTAN DD UNIT F2QTB02
⚠ M2003	1589S11007	MICRO MOTOR E20EL93
Q1310	0002300140	PHOTO COUPLER SPI-315-04
PCB550	A4A002A550	DECK PCB ASS'Y VE3597
SW102	0520U44002	SWITCH,ROTARY SRZZ0B047A
SW103	0501211001	PUSH SWITCH SPPB51096A
⚠ UN4001	A4A008A500	CYLINDER UNIT ASS'Y A4A008A500

INTERCHANGEABLE PARTS LIST

NOTE: THE FOLLOWING PART(S) MAY BE SUBSTITUTED FOR PARTS INDICATED IN THE ELECTRICAL REPLACEMENT PARTS LIST (WITH THE SAME REF. NO.). THESE PARTS SHARE THE SAME ELECTRICAL CHARACTERISTICS AND OTHER ELEMENTS FOR COMMON USAGE.
EITHER PART NUMBER MAY BE USED IN THIS UNIT.

	BASE		REPLACEMENT	
REF.NO.	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
CP801	069W320018	TS-80P-02-V1	0693320018 069D320018	RTB-2.36-2TV TS-80P-02-V1

HOW TO ORDER PARTS

When placing a parts order, please have the following information.

A. MODEL NUMBER and VERSION NUMBER
Located on the back of the unit.
EX: VR0100 (Model no.), VERSION/A (Version no.)

B. PART NO. and DESCRIPTION
Located in your SERVICE MANUAL. (See pages 94 ~103)
EX: I235953420, STK5342, Voltage Regulator

PART NO. DESCRIPTION

C. QUANTITY

D. Mailing address and NAME
EX: ABC Service Center
111 Broadway
NEW YORK, N.Y. 10005

ATTN: MR. X Y Z

ORION SALES, INC.
11 UNION DRIVE
OLNEY, ILLINOIS 62450
TEL. (618) 393-4322

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